- Weyerhaeuser's new corrugated board mill
- Fraser Companies awarded Fritz Memorial Trophy
- New results in mechanical pulping
- Chips from sawmill wastes
- Whither?

The Paper Industry

STABILIZED *Sodium Aluminate*

100% Soluble

100% Stable • 100% Available

NALCO 680 is *completely* soluble, *completely* stable...the one sodium aluminate that remains in solution as sodium aluminate and does not settle out.

Every ounce of Nalco 680 provides active alkaline alumina...always available for rapid reaction. That means reduced alum requirements, lower acidity, better sizing, better retention, and therefore, better products.

Read the results reported at right—then ask a Nalco Representative to show you how Nalco 680 can repeat them in your mill.

BOX BOARD MILL—Power Savings

"Machine tenders report much better sheet formation with Nalco 680, and that jordans can be cut back 10 amps. Machines are cleaner with no deposits on cylinders."

KRAFT MILL—Alumina Retention

"Improvement in sizing, better retention of alumina, and general texture of the sheet using Nalco 680 are very marked. Converter reports the sheet handles better."

SULFITE BOND MILL—45% Less Alum

"Results using Nalco 680 at the rate of five pounds per ton have been good. Improved sizing and reduced alum from 250 to 140 pounds per 4500 pounds of furnish. This enabled the mill to meet rigid pH specifications for the paper."

TISSUE MILL—Clean Machines

"No. 6 paper machine remaining clean and generally good results through the use of Nalco 680 applied at the rate of four pounds per ton."

NATIONAL ALUMINATE CORPORATION

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Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

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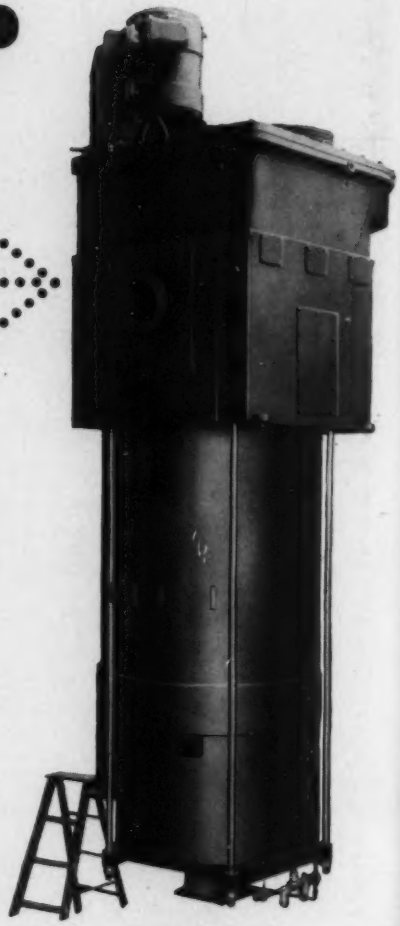
...Serving the Paper Industry through Practical Applied Science

PULP CAN BE *MORE* PROFITABLE!

Eliminate costly WET LAP shipping!

NEW JACKSON & CHURCH SYSTEM OF "CRUMB TRANSPORT" CUTS LABOR AND MAINTENANCE COSTS... SAVES TIME AND MONEY!



J-C Continuous Pulp Press

For the custom mill or the integrated mill shipping "excess" pulp, there's big news in this new J-C system.

No longer is it necessary to ship wet laps or sheeted pulp. Now through the use of the J-C Continuous Press, pulp to be shipped is de-watered, bringing consistency up to 40%, and the resulting "crumbs" may be easily blown into cars or trucks for shipping, completely eliminating "wet lap" handling. The pulp "crumbs" are just as easily handled at the receiving end.

A minimum of labor is involved in either pressing or handling. Capital expense is lower than with any other method. J-C Pulp Press installations are available in capacities of 25 ton to 300 ton units.

Write today for additional information about this new Jackson & Church system of "crumb" transport . . . now in successful commercial operation in custom and integrated mills.

J-C

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Work well done since eighty-one

Get sales-winning opacity in your waxed paper wraps with

UNITANE®

TITANIUM DIOXIDE PIGMENTS

The UNITANE pigments build opacity and brilliant whiteness into your waxing stocks, providing a sparkling white background for your customers' sales messages. Furthermore, the UNITANE pigments "lock in" these qualities so they remain, no matter how thoroughly the paper is waxed and moistureproofed.

UNITANE O-110, the water-dispersible anatase type, is brilliantly white, efficient, and easily dispersed to give uniform opacity. As with all UNITANE anatase or rutile pigments, a little goes a long way. Its particle fineness and high refractive index insure opacity that no finishing process can destroy.

Ask your Cyanamid Pigments representative for full information and samples of the UNITANE pigments best suited for your product and mill operations.

AMERICAN Cyanamid COMPANY

PIGMENTS DIVISION

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

BRANCH OFFICES AND WAREHOUSES IN PRINCIPAL CITIES

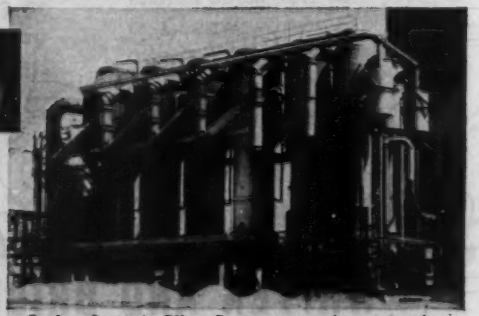
WHITEN AND BRIGHTEN WITH UNITANE

Three caustic tanks, three black liquor tanks and an accumulator tank at the St. Regis Paper Mill, Cantonment, Florida.

. . . for a paper mill's existence. To provide a mill with economical production in step with new processes calls for the best in tanks, evaporators, digesters and other steel plate structures. CB&I has the facilities to design, engineer, fabricate and erect to your requirements.

CB&I welded steel plate structures are a familiar sight throughout the paper industry . . . and for good reason . . . CB&I has built vessels and special plate work to meet the most exacting individual requirements for more than 60 years. Write our nearest office for further information. Estimates or quotations will be supplied upon request.

Above: Conkey Channel Switching Evaporator (Rosenblad Patents) operating on sulphite pulp mill waste liquors.



Conkey Sextuple Effect Evaporator, code construction throughout, operating on sulphate black liquor.

CB&I

Chicago Bridge & Iron Company

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The Paper Industry

Technology • Engineering • Management • Production

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The PAPER INDUSTRY is indexed regularly in **Engineering Index** and **Industrial Arts Index.** An index to each volume is issued annually by the publisher as a part of the April number.

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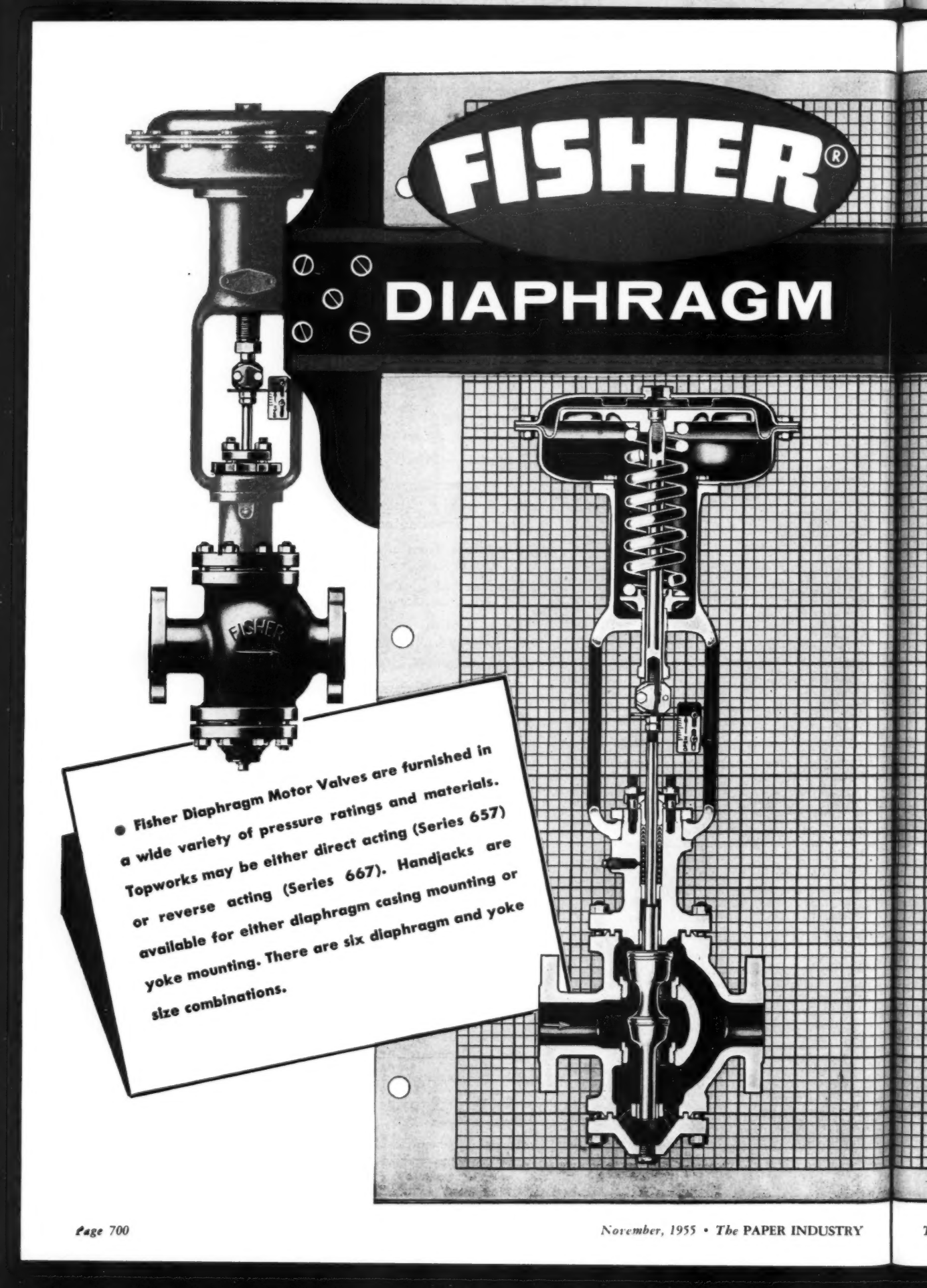
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● Fisher Diaphragm Motor Valves are furnished in a wide variety of pressure ratings and materials. Topworks may be either direct acting (Series 657) or reverse acting (Series 667). Handjacks are available for either diaphragm casing mounting or yoke mounting. There are six diaphragm and yoke size combinations.

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- Bolted-clamp type stem connection allows stem adjustment of 50% of total travel. Can be disconnected in the field without stem damage. Will not shake loose from vibration or rotational inner valve forces.

- Rugged body to yoke connection with hammer lug nut. Topwork can be removed without disturbing stuffing box.

- Specially designed Buna N molded diaphragms with Nylon insert retain superior flexibility at low ambient operating temperatures. Provides linearity between operating pressure signal and travel, and gives maximum effective area.

- Bolted gland stuffing box with Teflon packing.

- Stainless steel clear view travel indicator.

- Spring ranges: 3 to 15 psi; 6 to 30 psi.

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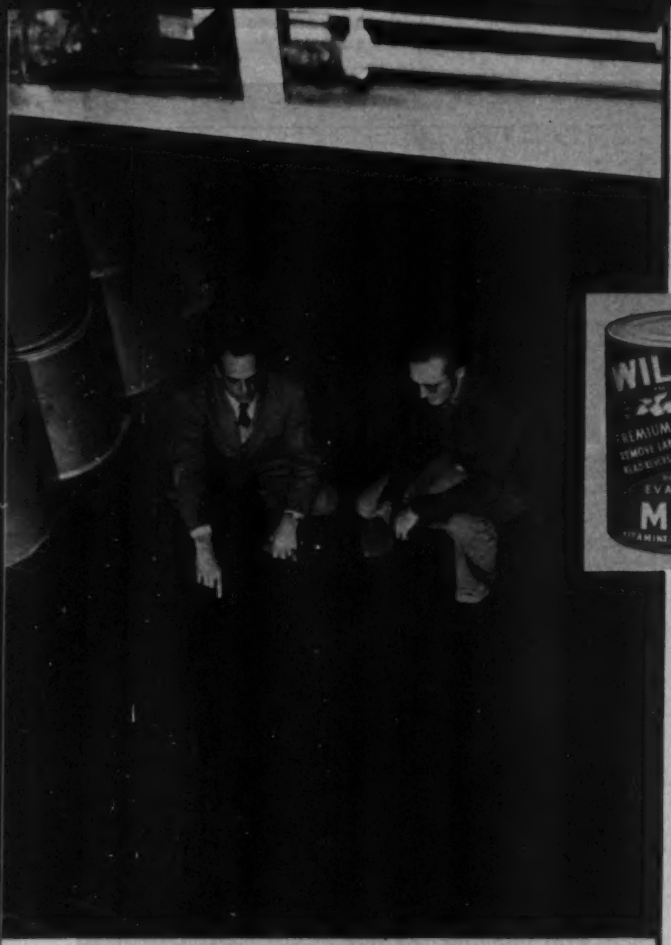
Our 75th ANNIVERSARY

STANODRIP Oil whips lubrication problem at Wilson Milk Company



Taylor Wiham, Wilson Milk Company (right), and John Pirtle, Standard Oil lubrication specialist, inspect oil stain on otherwise spotless floor, the result of previous oil leakage from overhead hydraulic bin loader. Leakage has been eliminated through use of STANODRIP Oil No. 29. Helping customers with lubrication problems is something John Pirtle is well equipped for. John has an engineering degree from Rose Polytechnic Institute, has completed Standard Sales Engineering School and has a number of years of field technical service experience. Customers find this experience and training pay off *for them.*

MANAGEMENT OF THE Wilson Milk Company plant, Sheridan, Indiana, had a serious lubrication problem. STANODRIP Oil solved it.

In overhead bin loaders, hydraulic rams push powdered milk along conveyor chute to weighing machine. Leakage of lubricant from rams on the floor below caused a sanitary and safety problem. Packings were replaced every two months but leakage often recurred as early as two weeks after packing replacement.

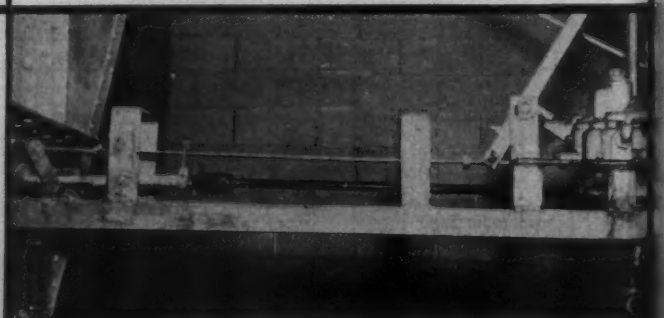
Then Mr. Taylor Wiham, Assistant Superintendent, called in John Pirtle, Standard Oil Industrial lubrication specialist. Mr. Wiham asked about STANODRIP Oil and its possible use as a solution to this lubrication problem. Decision was made to convert to STANODRIP Oil No. 29. Old oil was removed, packings replaced and STANODRIP installed.

In more than 8 months since installation of STANODRIP Oil, there has been no leakage, no packing replacement. Hydraulic rams are lubricated without oil dripping or creeping.

Maybe STANODRIP Oil can serve you as it has Wilson Milk Company. Find out. In the Midwest, call your nearby Standard Oil lubrication specialist. Or contact Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD

STANDARD OIL COMPANY
(Indiana)



Three bin loaders like the one shown here dripped oil until converted to STANODRIP. No leaks have occurred in 8 months since. Previously, packings were replaced every two months. Even then leakage often recurred as early as two weeks after repacking.

No other drive does all these jobs like

Link-Belt SILENT CHAIN

YES, if you need a drive like any one of these six, you're money ahead with SILENT CHAIN

COMBINING the flexibility and quietness of a belt with the positive action and durability of a gear—Link-Belt Silent Chain offers unmatched advantages for a wide range of drives. Check these reasons why:

- Lower cost—often lower in first cost, always lower in ultimate cost.
- Longer life—trouble-free performance for 25 or 30 years is common.
- No dismantling machine or removing sheaves for repairs.
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- Maintained ratio assures full productive capacity.
- Slipless action assures a better product.
- Easy to install.
- Safe to employees—operates in oil-retaining casing.

New 88-page Book 2425 gives complete data on silent chain. Ask a Link-Belt engineer or distributor for your copy today.

LINK-BELT

13,922

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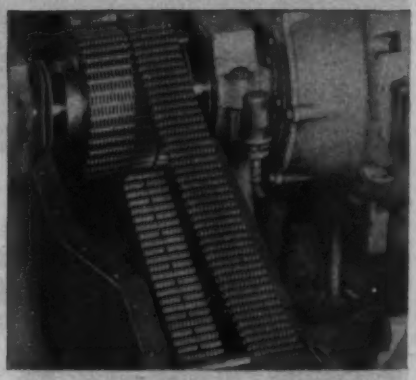
LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

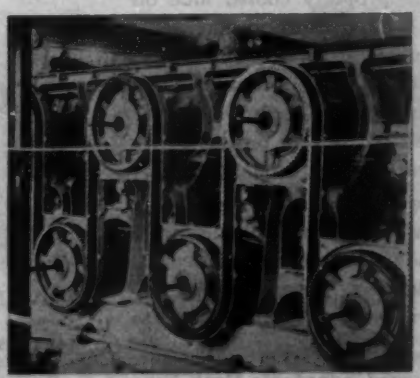
1 **Production increased 33%** when speed of this peeler lathe was stepped up by installing two silent chain drives. Neither engine nor lathe had to be moved.



2 **Constant, high speeds** were assured by equipping each of 48 automotive test stands with two Link-Belt Silverstreak Silent Chain Drives.

3 **Long life under severe service**—This 250-hp Link-Belt Silent Chain Drive has operated line shaft in cold draw section of seamless tube company since 1916.

4 **Fractional hp drives** are positive and dependable with Link-Belt Silent Chain. Above, two 3/8" pitch chains drive machine fabricating refrigerator parts.



5 **Accurate timing** is guaranteed for this dryer by Link-Belt Duplex Silent Chain. All shafts travel at uniform angular velocity, permitting precise coordination of process.

6 **Minimum maintenance**—This is one of 24 Link-Belt Silent Chain beater drives in a pulp mill. All have operated for many years with little attention.

COMPACT ROSS EXCHANGER

chosen to cool lube oil for 500th Sutherland Refiner

The cumulative experience gained in designing, building and equipping 499 other refiners is reflected in this one. It's the 500th to carry the Sutherland nameplate!

Installed as an integral part of its lubrication system is a Ross Type BCF Exchanger. Roller and thrust bearings are sure to receive their full share of properly cooled lube oil *at all times.* Says Sutherland Refiner Corporation, "Our reasons for selecting Ross Exchangers are their compactness and the fact that they are economical both in first cost and in service . . . it is important that there is a size for each of our requirements so that we need not use an unnecessarily large unit to provide the proper rate of heat exchange."

Standardization that makes a wide range of sizes promptly available is one of the big reasons why Ross Exchangers are preferred throughout the pulp and paper industry for engines, compressors, turbine drives, calenders, paper making machines, paper machine dryers, grinders and rewinders . . . to cool oil, water, air and hydraulic fluid.

For detailed information on rugged, adaptable Ross Type BCF Exchangers, request Bulletin 1.1K5.

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EXCHANGERS

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KEWANEE-ROSS CORPORATION

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Preferred for Precision and Performance

Powell Valves are the choice of engineers because they know every valve is precision made, meeting every specification—every time.

And there are other good reasons why engineers prefer Powell Valves—because Powell Valves are dependable . . . economical . . . and Powell has the COMPLETE quality line of valves.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our complete line, and help solve any flow control problem you may have.

The Wm. Powell Company
Cincinnati 22, Ohio... 109th year

FIG. 1893 (Sectional)—
Alloy Cast Iron
O. S. & Y. Gate Valve
for 200 Pounds W. O. G.

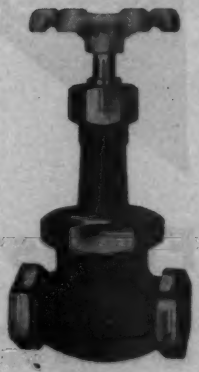

FIG. 2608—Bronze
Full Flow Globe Valve
for 200 Pounds W. P.

FIG. 375—Bronze
Gate Valve for 200
Pounds W. S. P.

FIG. 2192—
Ni-Resist* Large
Swing Check Valve
for 200 Pounds
W. O. G.

*Trade-mark of The International Nickel Co.

POWELL VALVES

Test-Prove

KELSIZE

and

KELGIN

for uniform high-density development

KELSIZE

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Size-press or calender application of Kelsize or Kelgin provide controllable and uniform high-density in all grades of paper and paperboard, fourdrinier or cylinder.

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- Better Coating Surface

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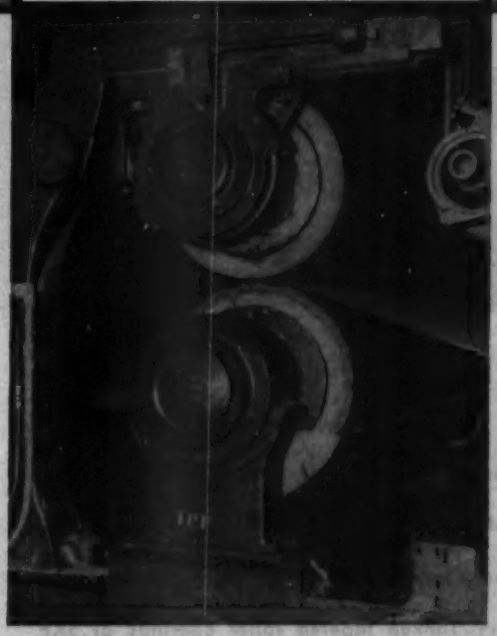
Carbon Paper Tests Prove the Case for

BLACK-CLAWSON CROWNLESS PRESS ROLLS



Recent comparative field tests, the results of which are shown above, involved the use of pairs of conventional press rolls and pairs of B-C Crownless Press Rolls. The procedure was to lay carbon paper between two strips of graph paper and set the top roll down at various pressures to make visible nip impressions.

The differences in nip patterns between conventional press rolls and Black-Clawson Crownless Rolls tell an amazing and interesting story—actually prove that only Crownless Press Rolls can give you uniform nip pressure, uniform water removal and uniform felt wear.

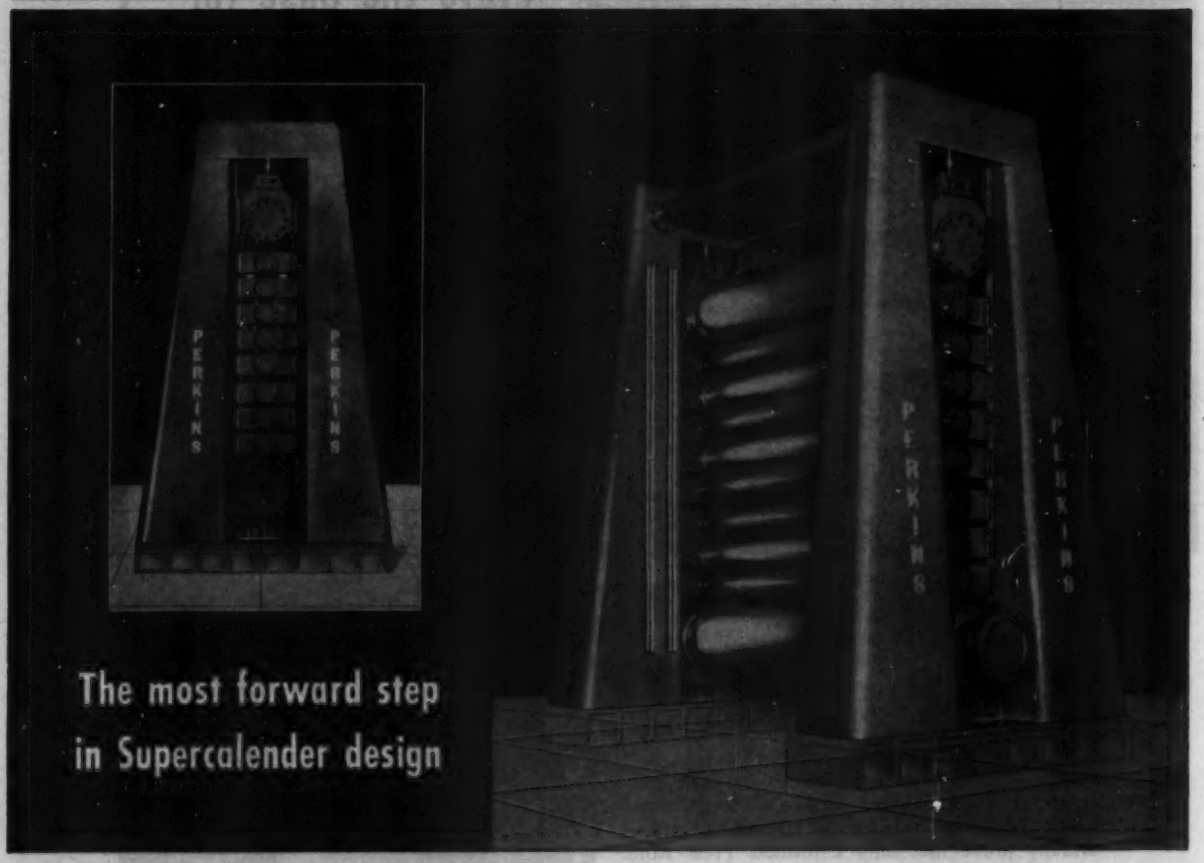
Bulletin 8-BC describes these tests and contains comparative nip impression readings, nip patterns, construction details and other advantages of Black-Clawson Crownless Press Rolls.

Write for Bulletin 8-BC today.

THE BLACK-CLAWSON COMPANY

BLACK-CLAWSON DIVISION • HAMILTON, OHIO

PERKINS ANNOUNCES—
NEW SUPERCALENDER DESIGN

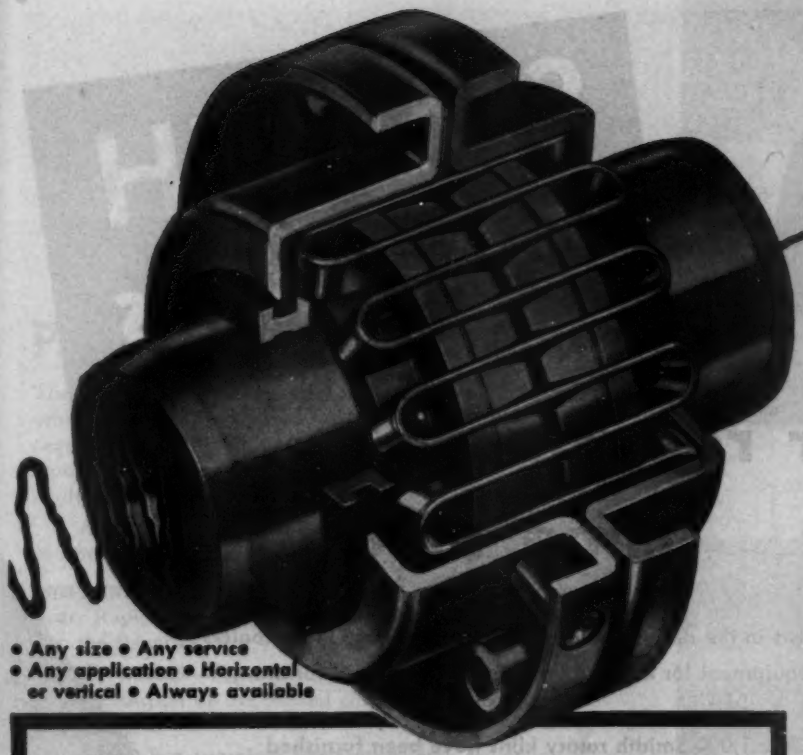


The most modern and rugged design Supercalender ever built for super finishing—"Steady as a Rock"—frames and base of heavy fabricated steel plate sections, reinforced throughout—making possible speeds and pressures beyond present-day practices. Equipped with heavy Timken tapered roller bearings or SKF spherical self-aligning roller bearings. This new Perkins design is the most forward step in the design of Supercalenders in years.

All hydraulic pipe lines, oil lubrication lines and air lines will be concealed inside the calender frames, with easy access for installation of the pipe lines. The Calender will have double tee slots on each frame upright for rigid support of fly rolls, platforms or other members to be attached to the inside of the calender frames. Each Supercalender to have a roll removal unit for ease in removing the rolls endwise through the calender frame gaps.

B. F. PERKINS & SON, Inc. • HOLYOKE, MASS.

Southern Sales Office **• 1609 Liberty Life Bldg. • Charlotte • North Carolina**



• Any size • Any service
• Any application • Horizontal or vertical • Always available

Why FALK Steelflex Couplings give the *finest* protection for connected machinery

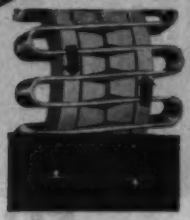
Maximum protection of connected machinery is best provided by Falk Steelflex Couplings because, thanks to their exclusive design, they overcome the damaging conditions of shock loads, shaft misalignment and vibration. How this unique multiple protection is made possible is shown at the right.

Falk Steelflex Couplings give the most economical protection, too, because they make connected machinery last longer and give better service. Furthermore, when actual coupling costs are figured per year of service, Falk Steelflex Couplings show substantial savings through their rugged all-steel construction, easy interchangeability and low maintenance requirements.

The basic Type F Steelflex Coupling—in 33 sizes to cover capacities from 2/5 through 70,000 hp per 100 rpm—meets over 90% of all industrial applications. Special or Dual Purpose Steelflex Couplings are available for problem applications. Write to Department 247 for engineering bulletin, including selection and dimension details.

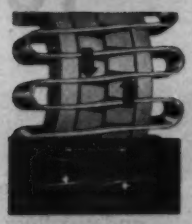
Exclusive FALK Steelflex grid-groove design smothers shock and vibration.

The damaging effects of shock and vibration can shorten the life of any connected machinery. Here is how the Steelflex grid-groove design overcomes these common enemies.



Under LIGHT LOADS

The gridmember bears only at outer edges of grooves. The long span between points of contact remains free to flex under load variations.



Under NORMAL LOADS

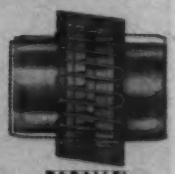
As load increases, the distance between supports on the grooves is shortened proportionately, but a free span remains to cushion shock loads.

Under SHOCK LOADS

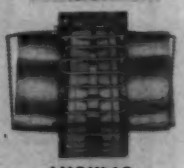
Under extreme overloads, the grid-member bears fully on the grooves and transmits full load directly. The coupling remains flexible, within its rated capacity.

...Accommodates shaft misalignment and free end float

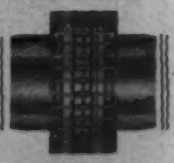
Basic maintenance procedure dictates regular inspection and correction of shaft alignment. Between inspections, Steelflex couplings provide protection by accommodating unavoidable shaft misalignment and end float. The gridmember which connects the two hubs of a Steelflex coupling is not fastened to either hub, so each hub can shift without imposing load on the other shaft.



PARALLEL MISALIGNMENT



ANGULAR MISALIGNMENT



FREE END FLOAT

THE FALK CORPORATION, Milwaukee 8, Wisconsin

MANUFACTURERS OF

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- Flexible Couplings
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- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

FALK

...a good name in industry

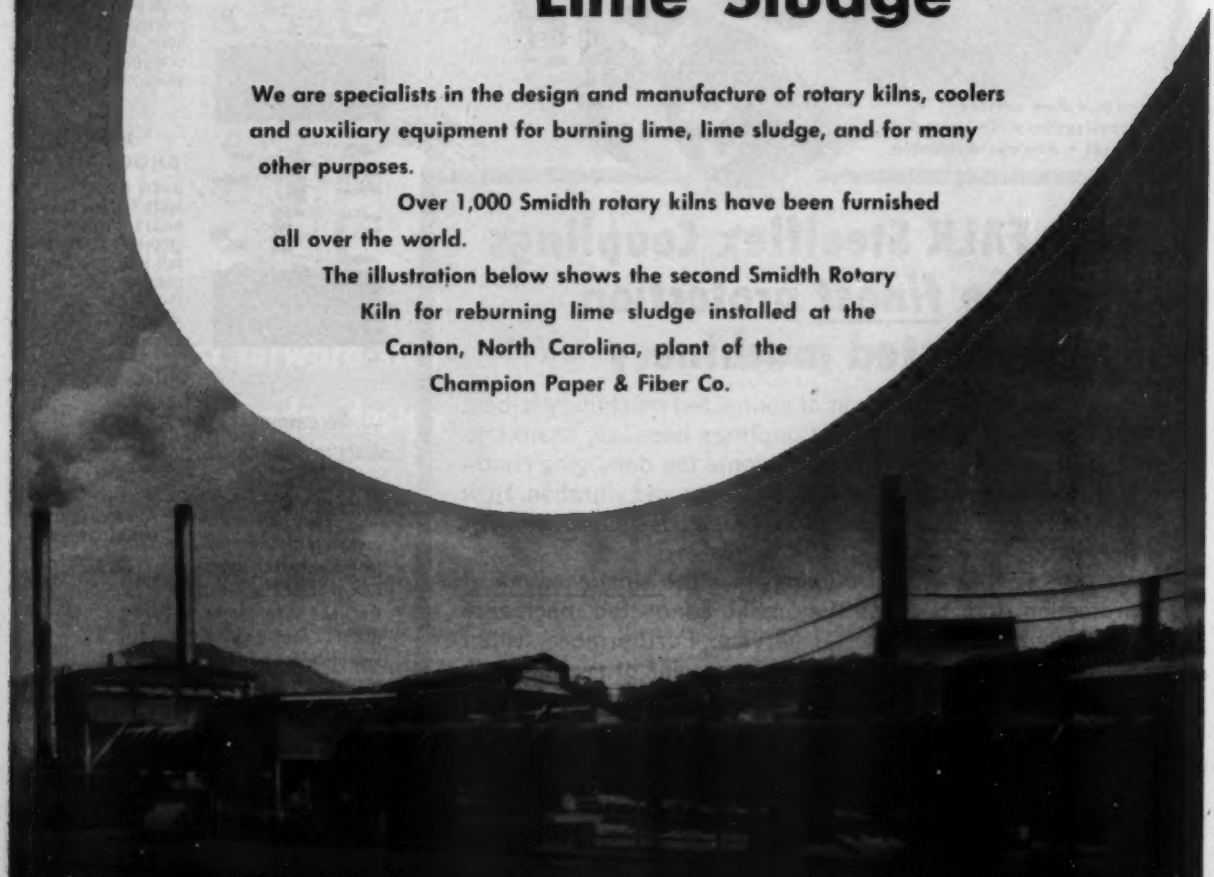
SMIDTH Rotary Kilns

For reburning Lime Sludge

We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge, and for many other purposes.

Over 1,000 Smidth rotary kilns have been furnished all over the world.

The illustration below shows the second Smidth Rotary Kiln for reburning lime sludge installed at the Canton, North Carolina, plant of the Champion Paper & Fiber Co.



F. L. Smidth & Co., A/S
Vestergade 33,
Copenhagen K, Denmark

F. L. Smidth & Co.
Engineers and Machinery Manufacturers
11 West 42nd Street
New York 36, N. Y.

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London, W. 1, England

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F. L. Smidth & Co. of Canada, Ltd.
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42 Queen's Road
Bombay, India

Bauer

INTEGRATED
Pulp Processing Systems

These and other Bauer machines complement each other when integrated into one system. We can engineer a thoroughly integrated system for your mill from the chipping operation to the finished pulp ready for the paper machine.

Ask our representative to discuss a system or part of a system with you.

DIGESTERS—For quick-cycle continuous operation, the Bauer Rapid Cycle Digester. For continuous flow cooking, the Bauer-Grenco Continuous Digester.

SCREW-PRESSES—For expelling liquor, mild steaming, and fiberization of the cooked chips, the Bauer Pressafiner.

REFINERS—For complete fiberization and dispersing action, the Bauer Double Revolving Disc Refiner.

CLEANERS—For the most efficient job of cleaning pulps, Bauer Cleaners in the pulp mill or paper mill.

STOCK REFINERS—For stock preparation with high freeness, high tear, and low horsepower, Bauer "Pump-Through" Refiner.

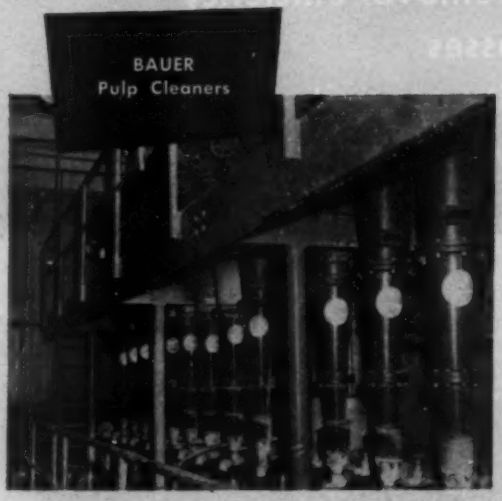
Literature on any of these machines will be gladly furnished.

THE BAUER BROS. CO.

1759 SHERIDAN AVE. • SPRINGFIELD, OHIO

BAUER
Rapid Cycle
Digester

BAUER
Pressafiners



BAUER
Pulp Cleaners

BAUER
Double Revolving
Disc Refiners

BAUER
Pump-Through
Refiner

The oldest in experience
presents the newest
in centrifugal

STOCK CLEANING

THE NICHOLS FREEMAN

VORJECT
Trade Mark

Cleaner

PRIMARY

SECONDARY

The original designers of centrifugal stock cleaning equipment now introduce a completely new stock cleaner incorporating a tangential rejects system that assures the trapping and immediate separation of foreign material. Design features prevent adding air to stock.

- No insuction of air
- High shive removal efficiency
- Low fibre losses
- High capacity per unit
- Stainless steel construction at low cost

NICHOLS
Engineering & Research Corp.
70 Pine Street, New York 5, N. Y.
1477 Sherbrooke St. W., Montreal 25, Canada

A. H. LUNDBERG INC., 308 Orpheum Bldg., Seattle, Wash.
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DOUGLAS-ROBBINS & CO., Minooka, Ill.

. . For use in Pulp Mills, De-Ink Plants and on Fourdrinier and Cylinder Machines

ANNOUNCING A NEW COLD WATER SWELLING LYCOID®

Simple dry addition to beaters ...no cooking required

Stein, Hall & Co., Inc. announces a revolutionary addition to an already famous line of LYCOID® galacto-mannan colloids, which will save you time, money and equipment.

This *new* LYCOID® can be added dry directly to beaters, hydrapulpers and other pulping equipment because of its unique cold water swelling properties which completely eliminate cooking, and permit quick and easy dispersal.

New LYCOID® joins the already famous Stein Hall family of galacto-mannan colloids, long used by cooked addition to the wet end after refining. It was to be expected that the research facilities that have for so long developed one successful formulation after another for the paper field, should discover and perfect this *new* LYCOID®.

The unique advantages of the entire LYCOID® family are now available for all types of addition. Low concentrations impart striking improvement in formation on cylinder and Fourdrinier machines, acting as a fibre deflocculent, and resulting in increases in mullen, tensile, fold, erasure, Concora and stiffness, printability and many other specifications.

No matter how specialized your gallacto-mannan requirements, Stein Hall can formulate a LYCOID® to suit your exact needs.

For samples of LYCOID® or further information write the Paper Mills Department, PI-11.

STEIN SH HALL

285 MADISON AVENUE NEW YORK 17, N. Y.

Established 1866

Branch offices in 17 U. S. cities and Canada.

Depend on LADISH

- Carbon Steels
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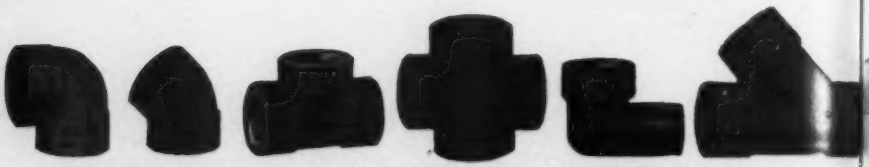
- Chromium Type Stainless
- Chromium-Nickel Stainless
- Molybdenum Type Stainless
- Wrought Aluminum
- Aluminum-Copper Alloys

BUTT WELDING FITTINGS

½ inch through 42 inches . . .

FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGES

½ inch through 24 inches . .



FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS

⅛ inch through 4 inches . .

LARGE DIAMETER AND T.E.M.A.* STANDARD FLANGES up to 20 feet O.D.

LONG WELDING NECKS up to 24 inches, 150 lb. through 2500 lb.

*Tubular Exchanger Manufacturers Association

Complete Service . . .

BUTT WELDING FITTINGS

Schedules 5S, 10S, 40S, 80S, and other Schedules and wall thickness.

FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGES

150 lb. through 2500 lb. pressure ratings.

FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS

150 lb. Corrosion Resistant and 2000 lb. through 6000 lb. ratings.

FOR FITTINGS FROM ANY FORGEABLE MATERIAL TO MEET YOUR SERVICE REQUIREMENTS

You get prompt, efficient service when you specify and order from the complete Ladish Controlled Quality line. Fittings *in any forgeable material* in virtually every type, size, wall thickness or pressure rating . . . are produced to one uncompromising Controlled Quality standard . . . and identified with heat code symbols pioneered by Ladish as verification of metallurgical integrity resulting from exhaustive tests made in the Ladish metallurgical laboratories.

For *complete service* on your fittings requirements, depend on the Ladish line and the services of your Authorized Ladish Distributor.

THE COMPLETE *Controlled Quality* FITTINGS LINE

LADISH CO.

CUDAHY, WISCONSIN

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- Manganese Bronze
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OPACITY
BULK
PRINTABILITY

Details on request

R. T. VANDERBILT CO. INC.

230 Park Avenue, New York 17, N. Y.

"SAVINGS in operation and maintenance first year were *more* than cost of four Yarway Digester Blow Valves"

THAT was the experience of a large Florida mill after they installed YARWAY Seatless Motor Operated Blow Valves on their digesters.

Clean, fast blows eliminated production delays. Expensive liquor loss from leaking valves ended. Remote control of motor operation reduced operating costs.

Continued satisfaction has resulted in installation of additional YARWAY Digester Valves for expanded plant facilities.

Such records are not unusual and new features like the YARWAY 17/4 PH stainless steel plunger and automatic lubricator, combined with improved operating control, make YARWAY Seatless Digester Blow Valves an even better buy today.

You may choose between hydraulic-cylinder or electric motor operated valves, all remotely controlled.

For the full story on Yarway Seatless Digester Blow Valves write for this free Bulletin B-440.

YARNALL-WARING COMPANY
149 Mermaid Avenue, Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY digester blow valves

The "Junior" Screen . . . smallest of *three* units producing from 35 to 150 tons per day, respectively.

Money Saving Midgets

Cowan Centrifugal Pulp Screens by

APPLETON MACHINE COMPANY

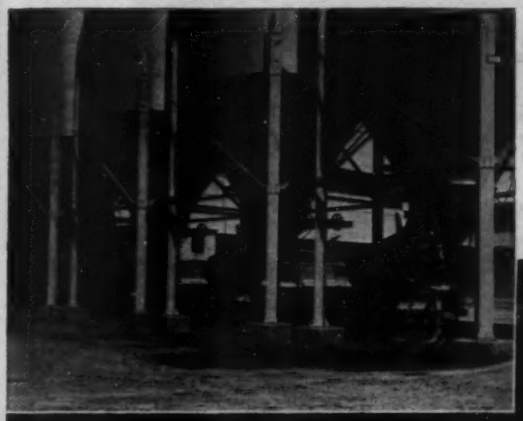
Added efficiency, greater economy are the watchwords for *Appleton Machine Company's* junior versions of the standard Mark "A" Cowan Centrifugal Pulp Screen, acknowledged as outstanding in its field.

The Mark "E" Screen is a half-sized model of the standard Mark "A", conservatively rated at a capacity of 2400 U.S.G.P.M. accepted stock. 50 h.p. is required to operate the Mark "E", but its drive is designed to accommodate a 60 h.p. motor, wherever needed. The Mark "E" is particularly advantageous in smaller mills, or as a supplementary screening unit. Also, installing two Mark "E" Screens—instead of a single larger machine—provides a definite safety factor in case of breakdown.

The "Junior" Screen is a quarter-sized model of the big Mark "A", with a rated capacity of 1400 U.S.G.P.M. accepted stock. 25 h.p. operates the "Junior" Screen, but it will handle motors up to 40 h.p. Greatest applications are as secondary screening units, and as a primary screen for mills producing a variety of pulp grades which require a system made up of small, separate units.

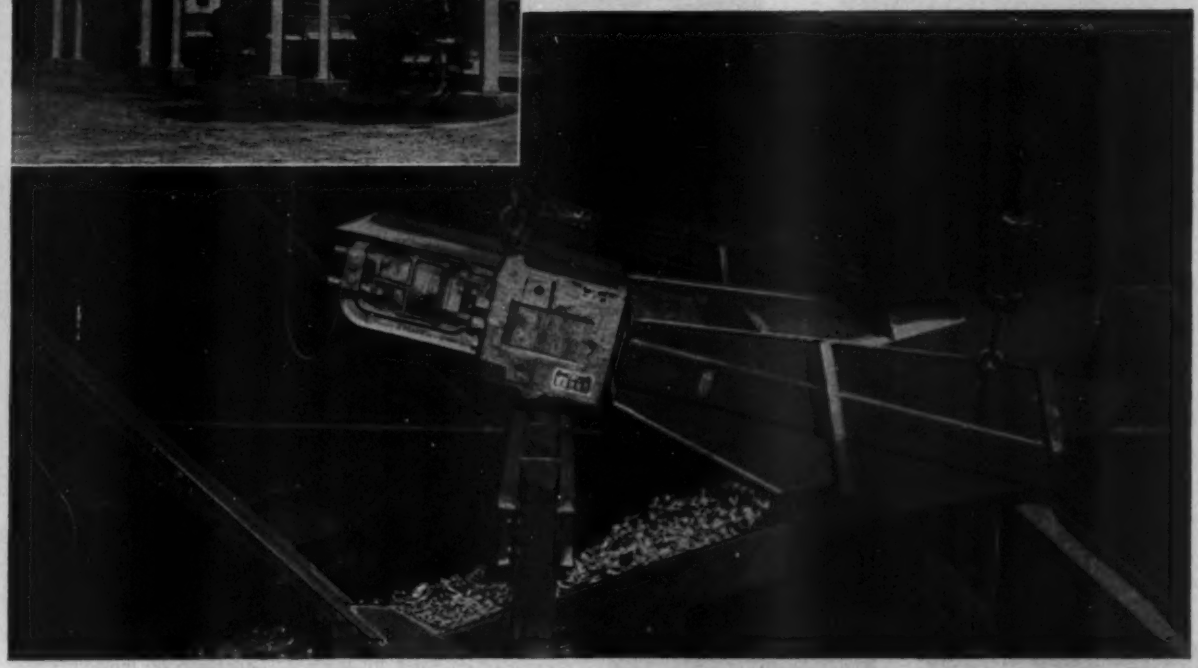
Performance of these two Cowan Screens is comparable in every way to that of the standard Mark "A" Screen . . . the same high consistency screening . . . low percent rejects . . . good fiber separation . . . low shower dilution pressure . . . top hydraulic efficiency. Typically sound *Appleton Machine* construction plus a protective coating tailored to fit your needs *complete* your assurance of long-time satisfaction.

CUSTOM-BUILDERS OF PULP & PAPER MILL MACHINES
WINDERS • FINISHING ROLLS • REWINDERS



At Left: Battery of four Jeffrey-Traylor 4' x 6' electric vibrating feeders delivering controlled quantities of hard and soft wood chips to collecting belt conveyor in pre-digester process at large southern mill.

Below: Twin Jeffrey-Traylor 54" x 4' electric vibrating feeders delivering chips to screens at large northern mill.



JEFFREY delivers chips when and where you want them

Modern paper and pulp processing demands continuous flow of chips at low overall cost. That's why Jeffrey-Traylor electric vibrating feeders and conveyors have such wide application in your industry. They deliver the chips exactly *when* and *where* you want them.

These versatile units carry up to 200 tons of chips per hour from bins to belt or scraper conveyors. There's a type and size to meet every requirement.

For detailed description of the basic design and operating principles of Jeffrey-Traylor electric vibrating feeders and conveyors—as well as specific information concerning applications — write for technical literature.

THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

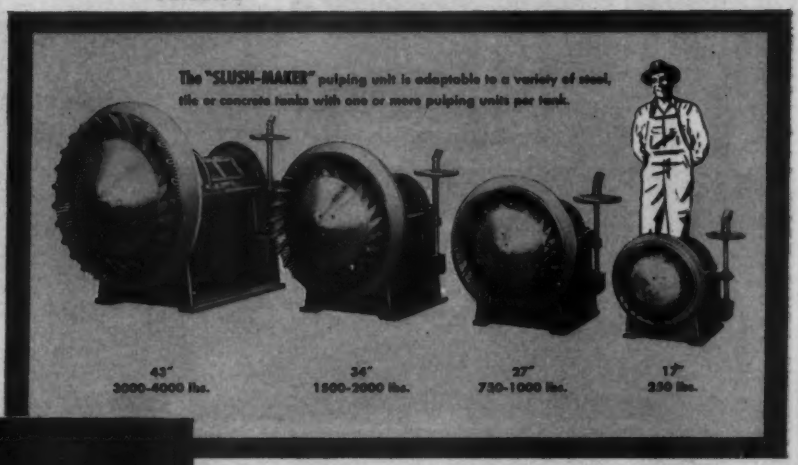
ELEVATORS • SHREDDERS • BELTS • SCREENS • CHAINS
APRONS • SCRAPERS • HOPPERS • STACKERS • SPIRALS

MORDEN SLUSH MAKER

Patented

For Pulping

The Morden "Slush-Maker" can be used for either continuous or batch operation. Whichever method is used, there is a rapid defibering.



These thumbnail sketches show some of the many tanks that can be designed to suit specific mill requirements.

Dry-End Continuous Broke Pulper with Single Rotor

Low-Headroom—Side-Discharge Tank

Special Single-Wall Cylindrical Tile Tank

Standard Double-Rotor Tank for Larger Capacity

Special Cylindrical-Top Steel Tank

Dry-End Continuous Broke Paper Pulper with Double Rotor

Standard Tank with Special Charging Port

Advantages

- **Full Bales or Slabs** can be charged by hand, lift truck or conveyor.
- **Dry-End Broke** can be handled continuously, directly under the paper machine.
- **Wet-Strength Papers** are readily reclaimed with the "Slush-Maker".
- **Rapid Pulping Action** permits greater production per day.
- **Operation** can be batch or continuous.
- **Vigorous Circulation** thoroughly mixes the colors and chemicals in less than a minute.
- **Completely Cleared Stock** reduces amount of beating and jordaning treatment required after pulping.
- **Tramp Materials** will not damage or bind the pulping unit.
- **Side-Mounted Pulping Unit** permits low-headroom applications, simple drives.

Northeastern States Representatives:
ORTON CORPORATION, Fitchburg, Massachusetts

Midwestern States Representatives:
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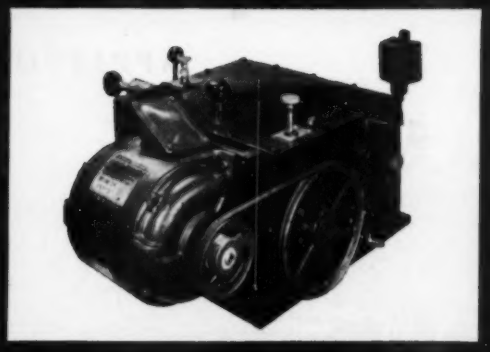
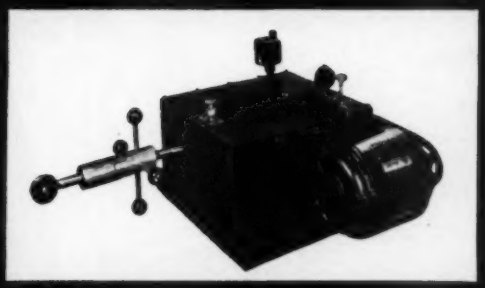
MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

3420 S. W. MACADAM

PORTLAND, OREGON





To eliminate wrinkles in your mill rolls, regardless of size.

To eliminate hard and soft spots in your rolls.

To eliminate customer complaints because of wrinkles and hard and soft spots in your rolls.

Ross-Midwest Hydroscillators are hydraulically operated—can be set to deliver strokes of from ½" to 3¾" as required. Oscillation speed from 0" to 24" per minute. Thrust up to 11,000#.

In short, a Ross-Midwest Hydroscillator on your Rewinder will soon return its cost and, with very little maintenance, serve for many years thereafter.

Very little floor space required Write for illustrated Bulletin No. 101 giving full particulars.

Fox River Paper Corp.

APPLETON, WISCONSIN

No. 4 MACHINE

An important step in the continuing modernization program at Fox River Paper Corporation is the new Valley Inlet installation on machine No. 4. Within six weeks after the completion of this installation, a similar Valley Inlet was ordered for machine No. 5.

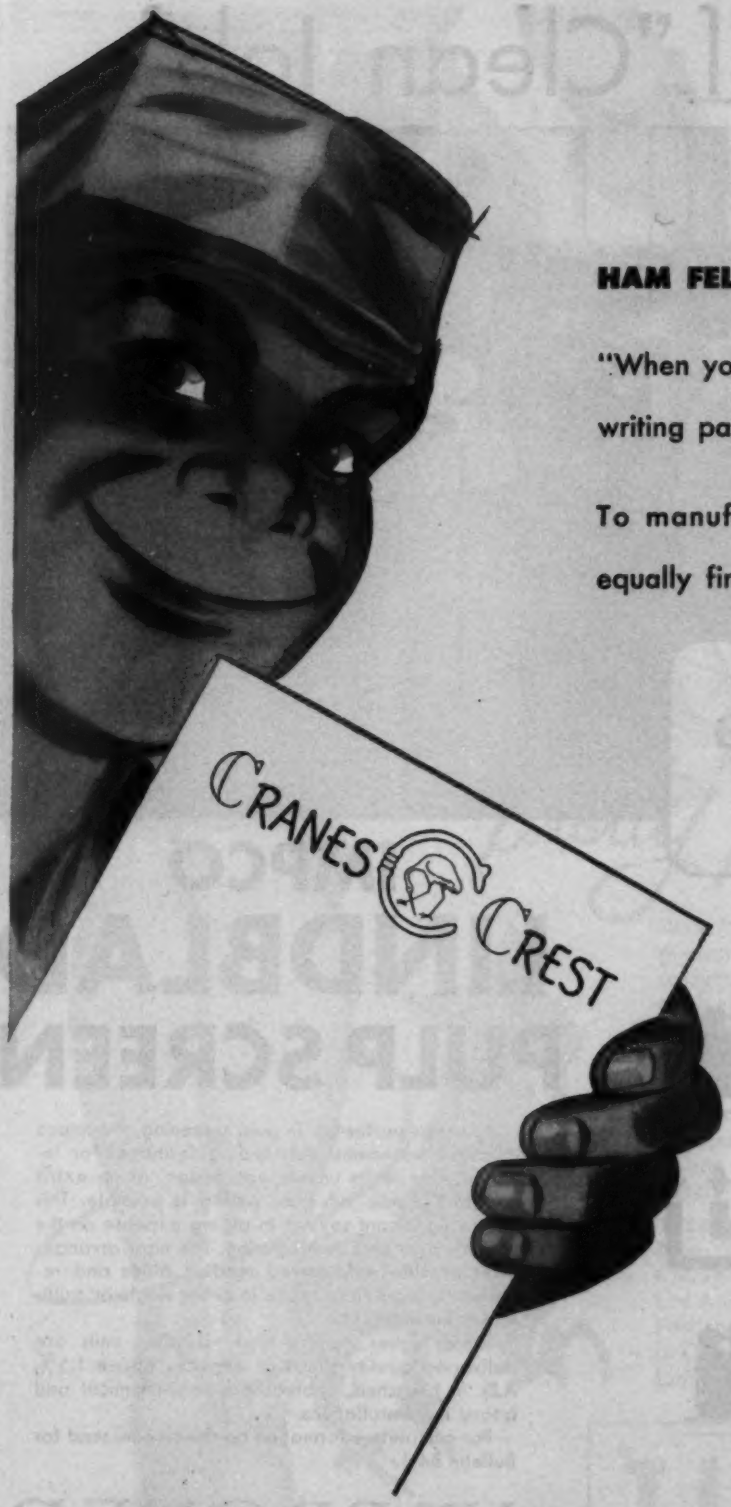
again it's inlet and headbox by--

VALLEY

for detailed information write

VALLEY IRON WORKS CO. APPLETON, WISCONSIN

Canadian Representatives: Pulp & Paper Mill Accessories Ltd., P.O. Box 903, Station "O" Montreal 9, Quebec



HAM FELTZ says:

"When you see Crane's Crest on a sheet of writing paper — 'nuff said.

To manufacture such fine paper requires equally fine felts . . .

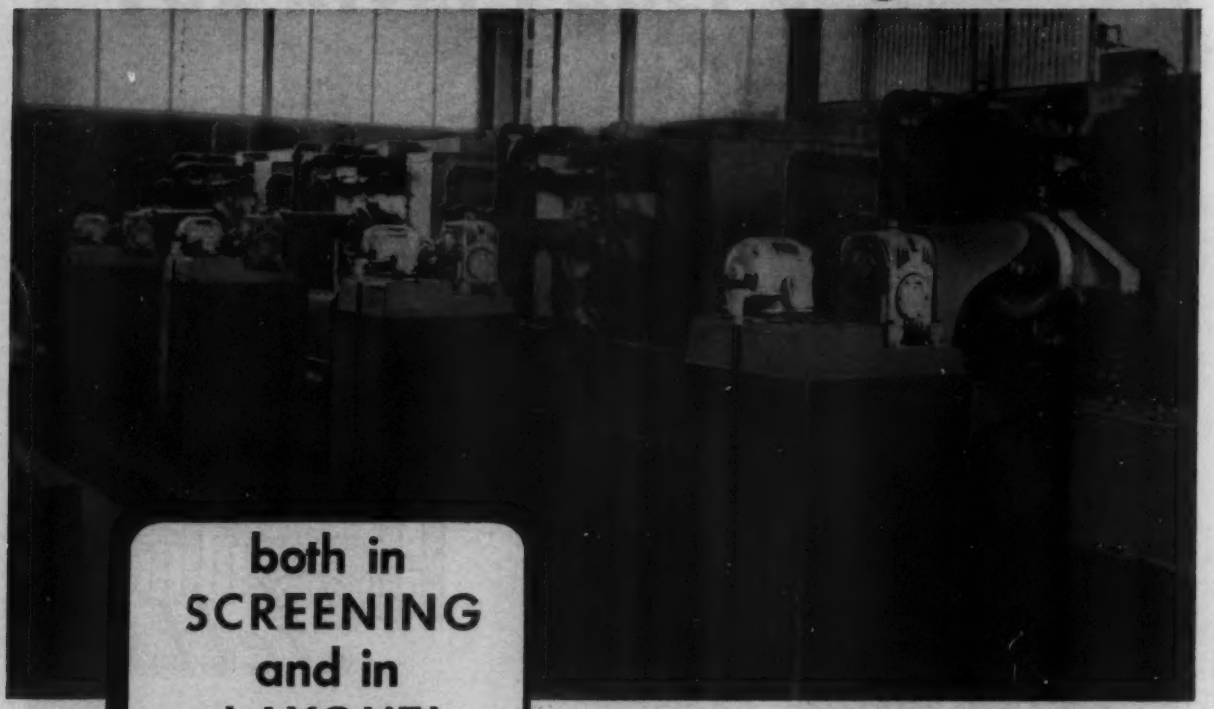
Hamilton Felts

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

MIAMI WOOLEN MILLS *Established 1858*

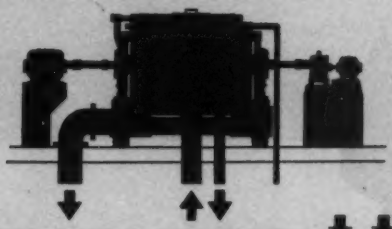
SHULER & BENNINGHOFEN, HAMILTON, OHIO

For a Real "Clean Job"–

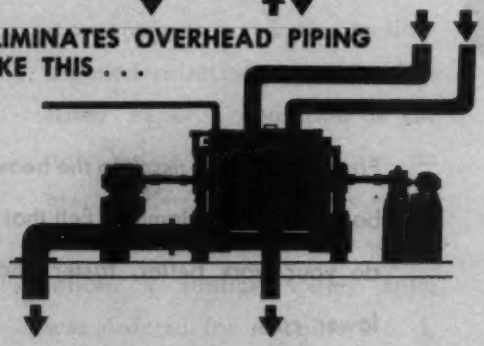


both in SCREENING and in LAYOUT!

INSTALLED LIKE THIS . . .



ELIMINATES OVERHEAD PIPING LIKE THIS . . .



IMPCO LINDBLAD PULP SCREEN

As a top performer in pulp screening, the Impco Lindblad has many outstanding features. For instance, due to its unique vat design, at no extra cost to the mill, sub-floor piping is possible. This means significant savings in piping expense on the runs for inlet and outlet piping. The neat arrangement provides uncluttered tending aisles and requires minimum floor space in either single or multi-screen installations.

These higher density type vibrating units are delivering quality pulps at densities above 1.5% A.D. in bleached, unbleached, semi-chemical and board mill installations.

For complete information on this screen, send for Bulletin B4-1.

IMPCO®

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

SHERBROOKE MACHINERIES LIMITED, SHERBROOKE, QUEBEC
Manufacture Similar Equipment in Canada

pretty package

Want "stand out" packaging? TITANOX white pigments add beauty, visibility, contrast and recognition to any package. For these brightest of white pigments provide a clean, sparkling background against which printed messages or illustrations are highly effective.

But for "stand out" packaging, be sure you use stock pigmented with "stand out" white pigments—TITANOX. For only TITANOX assures you of *consistently* fine results and *uniform* high quality in white coatings.

Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7.
In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

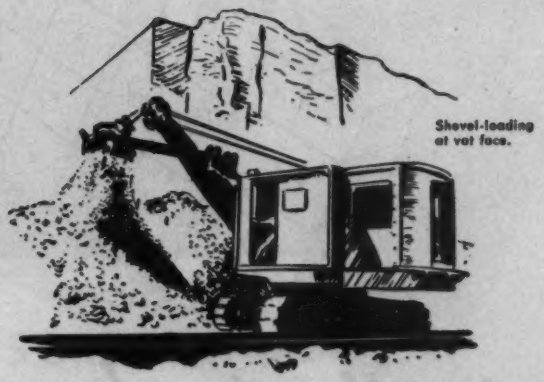
3057

TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY



Shovel-loading at vat face.

Crude Sulphur

for Industrial Use

from the properties of

Texas Gulf Sulphur Co.

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Producing Units

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- **WORLAND, WYOMING**

. . . he offers you world wide knowledge of water

Under the hat worn by "the man from Layne" is the experience gained in developing water resources of the world for nearly three quarters of a century. .

This knowledge is yours without cost or obligation. And experienced men know that on any question from exploration through well drilling to installation, as well as maintenance and modernization, to "ask the man from Layne" is to get unbiased factual information on any phase of water supply for industry, municipalities or agriculture.

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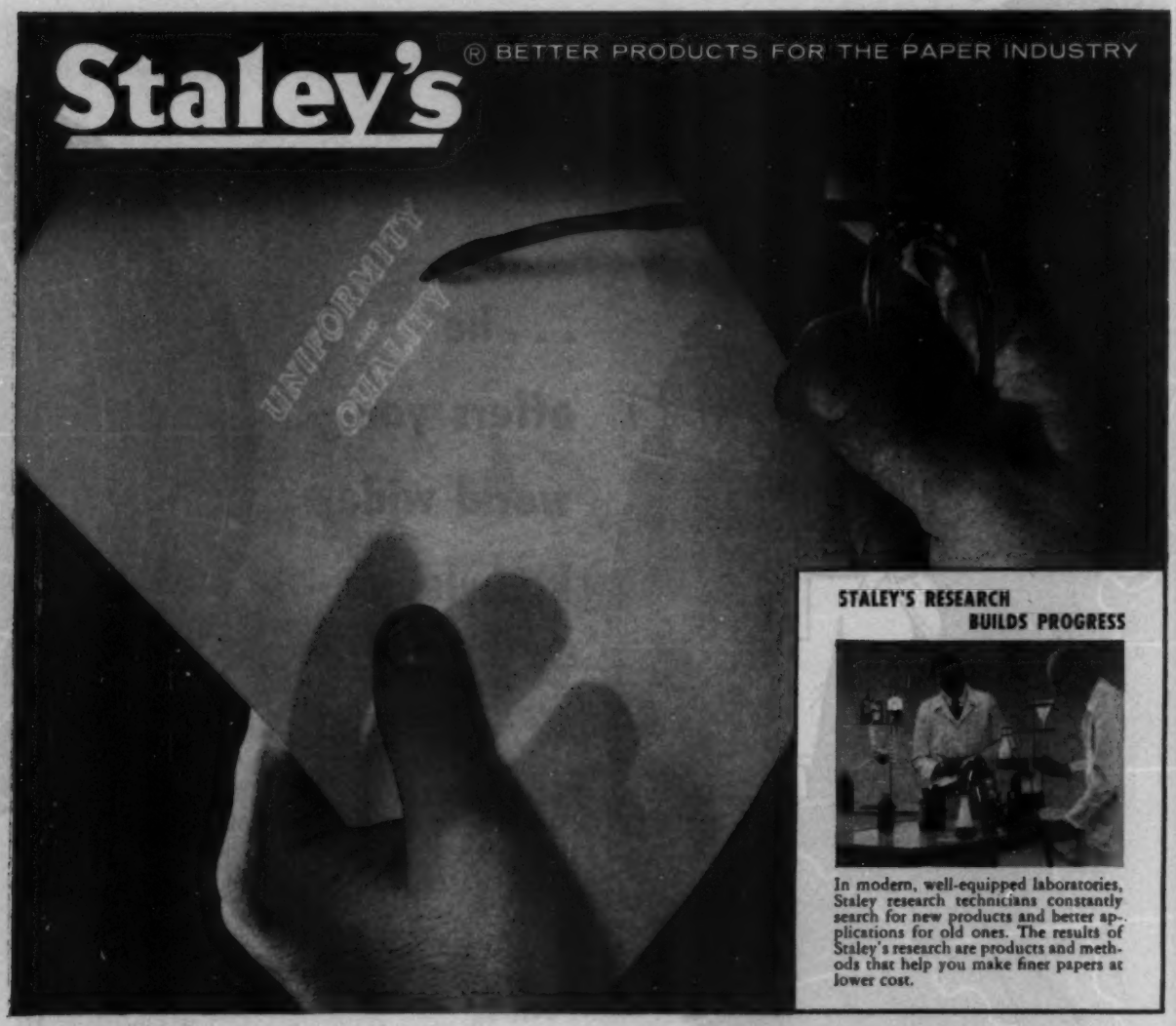
Staley's ® BETTER PRODUCTS FOR THE PAPER INDUSTRY



STALEY'S RESEARCH BUILDS PROGRESS

In modern, well-equipped laboratories, Staley research technicians constantly search for new products and better applications for old ones. The results of Staley's research are products and methods that help you make finer papers at lower cost.

How Staley's sizes up paper problems with solutions that finish in the money!

Staley's custom made starches offer greater production control for higher quality paper products

From the humble grocery bag to the authoritative bond, quality and uniformity remain the common goals of papermakers throughout all sizing, finishing and coating operations.

Developments achieved by Staley's in recent years are significant to management faced with these objectives. Advantages of the many custom-made Staley's starch products have helped the paper industry uphold high standards . . . while allowing greater product diversification.

Staley's reputation not only as a leading starch supplier, but as a service and research organization dedicated to helping you produce better paper products, stands as your guarantee of consistent, uniform, quality starches and dextrins for your paper mill. See your Staley Paper Representative soon . . . he'll be glad to show you how Staley's products can help ease production problems, make higher quality products in your mill.

A. E. Staley Manufacturing Company, Decatur, Illinois

Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City • Philadelphia • New York • St. Louis • San Francisco

PRODUCTS FROM CORN Staley's AND SOYBEANS

QUALITY PAPER PRODUCTS

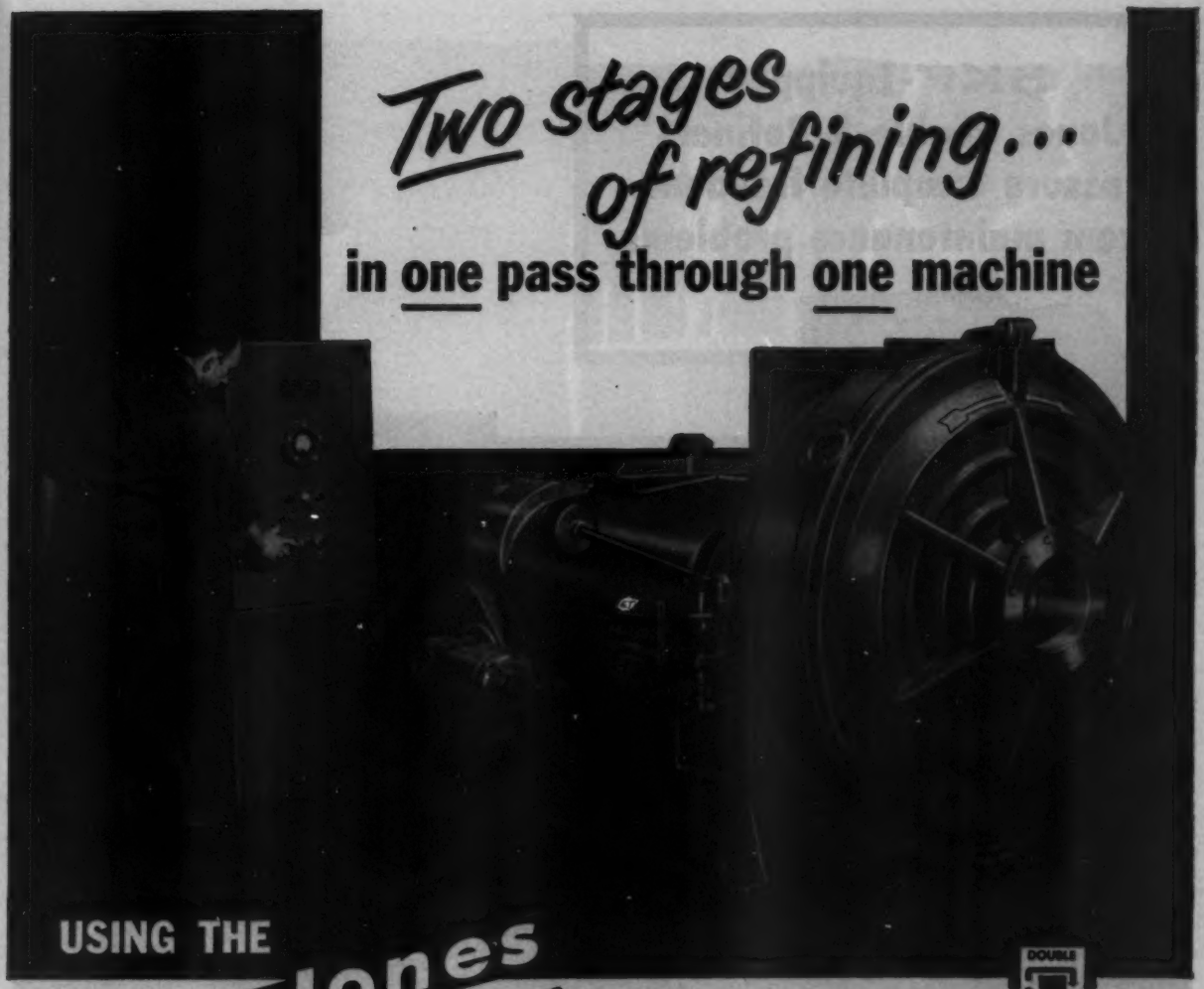
Coating Starches and Dextrins

Beater Starches

Calender Starches

Two stages of refining...

in one pass through one machine



USING THE Jones DOUBLE-D with DOUBLE FLO EFFECT

Does the work of two conventional refiners

That's the record in one big southern mill where the Jones Double-D Refiner has been in regular operation for more than 18 months.

For the Double-D, although new, is not untried. Far from it! Proven by exhaustive tests in a number of mills, this first truly pressurized disc refiner has demonstrated its ability consistently to do the work of two or more conventional refiners.

To learn more about its remarkable performance, clean design, and ease of maintenance and operation, ask your Jones representative or write us direct for Bulletin EDJ-1083.

One of four huge refining discs in the Double-D. Stock, passing under constant pressure between two stationary discs and two rotating discs, gets perfectly controlled 2-pass refining . . . double refining effect.

Jones

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

SKF-Equipped Jones Double-D Refiners assure complete freedom from maintenance problems

There's good news for paper mills in the line of Double-D pressurized double-disc refiners manufactured by E. D. Jones & Sons Company, Pittsfield, Mass. Twelve leading paper mills, where Double-D units have been in operation since their development two years ago, report complete lack of maintenance problems—and highly efficient and economical refining operation.

Double-D refiners are completely pressurized units with pulp flow through the machines almost entirely independent of the disc design. This feature makes it possible to:

1. Vary the flow-through rate within wide limits without changing disc design.
2. Change the type of stock treatment without changing discs.
3. Change the consistency of the stock to suit the particular needs of the mill without any other change, except for regulating the power.
4. Produce refined pulp with no aeration.

Contributing to the dependability of the Double-D refiner, by keeping friction at a minimum, are SKF Spherical Roller Bearings. These spherical bearings—like all SKF bearings—are designed, engineered and manufactured to meet the industry's most rigid performance requirements.

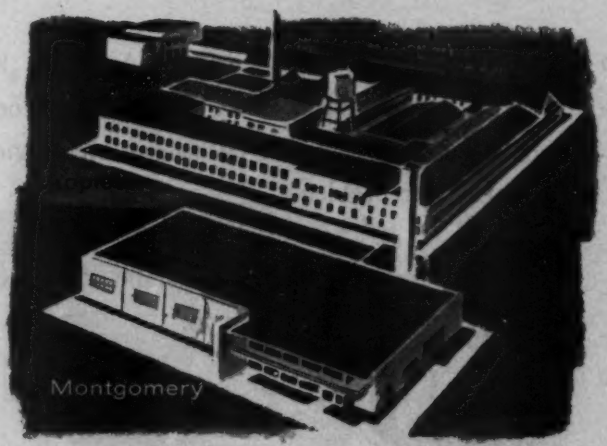
When you *design* paper mill machinery, look confidently to SKF to help you put *the right bearing in the right place.*

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA., *manufacturers of* SKF *and* HESS-BRIGHT® *bearings.*

SKF®

BALL AND ROLLER BEARINGS

Paper helps build 'em clear up to the sky

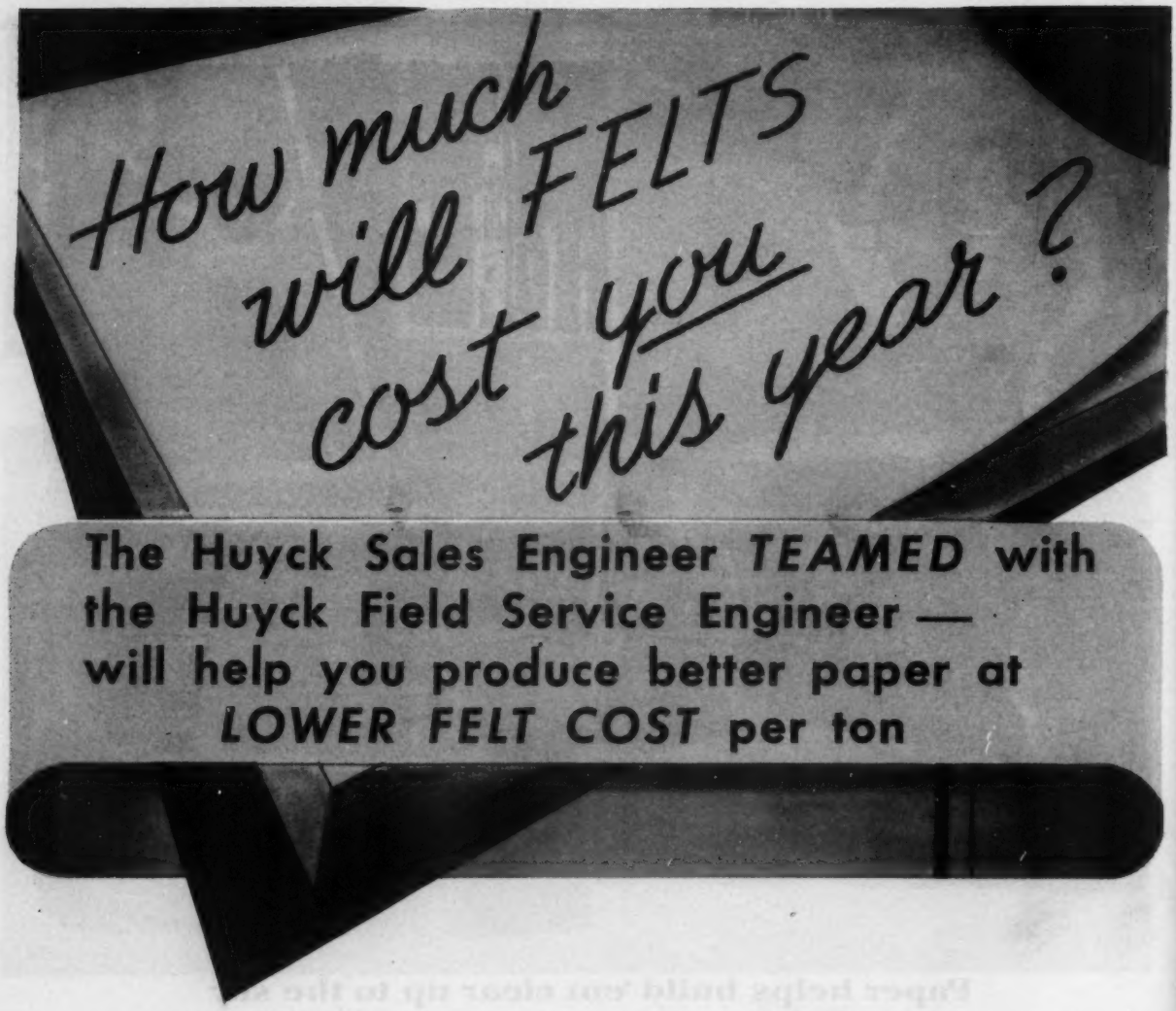


General Offices, Appleton, Wisconsin
Plants at Appleton, and Montgomery, Alabama.

From Main Street to Forty-Second, wherever house or office starts to climb, paper is on the job from the first whistle. In wallboards and floorboards—insulation, conduits, asphalt shingles... even in composition floorings, desk tops, and furniture when the tenants move in. Paper... essential ingredient of consistently better, more varied, and highly specialized materials—indispensable to modern building everywhere.

And in at the very start of paper for building—in every field where paper goes to work... Fourdrinier wires. Appleton Wires. Good wires—by a 59-year test of industry-wide acceptance and use.

Appleton Wire Works, Inc.


How much will FELTS cost you this year?
The Huyck Sales Engineer TEAMED with the Huyck Field Service Engineer — will help you produce better paper at LOWER FELT COST per ton

Huyck assigns *not one but two* "specialists" to work with you on your machine clothing requirements . . . and help keep felt costs down . . .

1. **The Huyck Sales Engineer,** thoroughly trained in feltmaking, and with an extensive background in paper manufacturing, visits you at regular intervals to help you plan your felt requirements.

2. **The Huyck Field Service Engineer,** assigned to your mill, moves in when a difficult situation arises. He follows felts in operation and maintains a close liaison with our felt designers. Applying his technical knowledge, he spends the necessary time with you to assist in solving your problems.

Take advantage of this unparalleled service, which only Huyck offers you.

NEW!

HUYCK FELTS

FIRST IN QUALITY . . . FIRST IN SERVICE

F. C. HUYCK & SONS • Rensselaer, New York
Established 1870

The Beloit Album

VISITORS TO BELOIT IRON WORKS, Beloit, Wisconsin, are greeted by this familiar sign extending for more than a hundred feet across the top of the pipe roll shop. From this huge plant, established in 1858, comes Beloit papermaking machinery known throughout the world. Currently under way is a gigantic expansion program which, when completed, will add over 176,000 square feet of manufacturing area to the 17.5-acre plant. A pictorial progress report appears on the following pages.

ITALIAN VISITOR Dr. Piero Bersano *(left)*, Technical Director of Cartiere Burgo, Torino, Italy, and Beloit's Foreign Sales Representative, C. K. Pfrangle, examine a Beloit suction box on the suction roll erecting floor, Beloit.

ROBERT GAIR'S William Schnorbach *(left)* recently visited Beloit to discuss the design of a new Kraft Paper Machine. Mr. Schnorbach is shown discussing specific details with Beloit Sales Engineer C. H. Swartz.

BOWATERS NEWFOUNDLAND Plant Engineer F. Dickson *(left)*, General Superintendent Newsprint H. A. Kelly, Research and Development Engineer M. C. Collins, and Beloit Sales Engineer A. G. Olson visit the main erecting floor to examine an Air-cushioned Inlet designed for a high-speed newsprint machine. An inlet, similar to the one pictured above, is installed on Bowaters' recordbreaking No. 1 newsprint machine at Calhoun, Tennessee.

TREES FOR TOMORROW 20,000 Norway pine and spruce were planted recently on property near Beloit Iron Works. P. J. Onkels, Mill Manager, Pacific Coast Paper Mills, stopped in to watch the planting. *(l. to r.)* R. A. Goodwillie, Beloit West Coast Representative; Mr. Onkels; W. S. Wood, Beloit Vice President; and William Sylvester, forester with Trees for Tomorrow, Inc., an industry-sponsored organization for the advancement of reforestation.

Beloit's Expansion Program

Vigorous expansion has been the watchword of the pulp, paper, and paperboard industry over the last decade.

To supply the needs of its customers, Beloit Iron Works has undertaken an almost continuous program of expansion and development. This issue of the Beloit Album brings you a pictorial progress report on our current expansion program.

The new suction roll and drive erecting floors—11,000 square feet—were occupied June 1, 1955. The welding shop addition, over 10,000 square feet, and the new machine shop, over 32,000 square feet, will be completed by the time this issue of the Beloit Album reaches you. Enlargement of the main

foundry bay, a new dryer and roll casting floor, new core room, and expanded storage facilities—totaling over 100,000 square feet—will be completed during 1956. Foundry plans also include the installation of new melting, moulding, and sand-system facilities.

Plant engineers have carefully planned and checked each detail of construction and tooling. High-speed modern machine tools, planers, lathes, boring bars, gear hobbers, and milling machines, to mention just a few, are being installed as quickly as space is available. These new tools, plus careful rearrangement of existing facilities, all add up to one thing—better service.

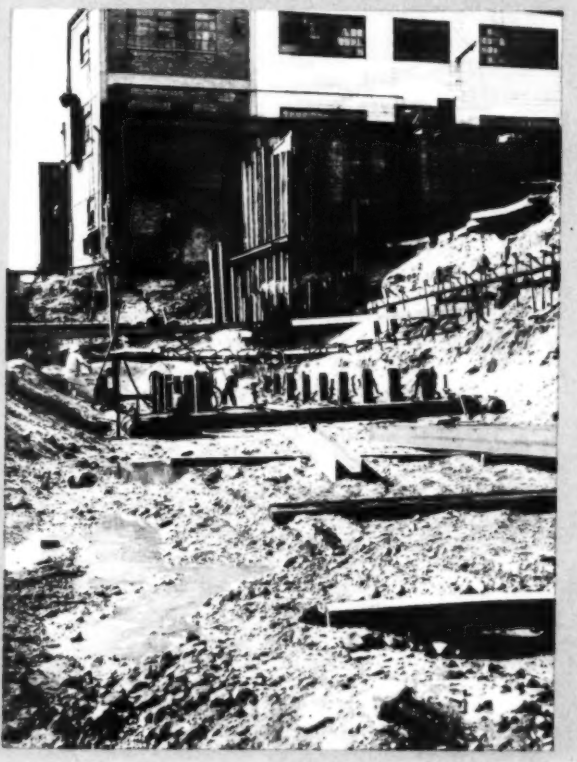
An expansion program means more than buildings and tools. It means people—highly trained personnel ready to translate customer requirements into completed papermaking machinery. Beloit Iron Works, now employing more than 2,000 capable men and women, anticipates a payroll of 2,300 persons when this expansion is completed.

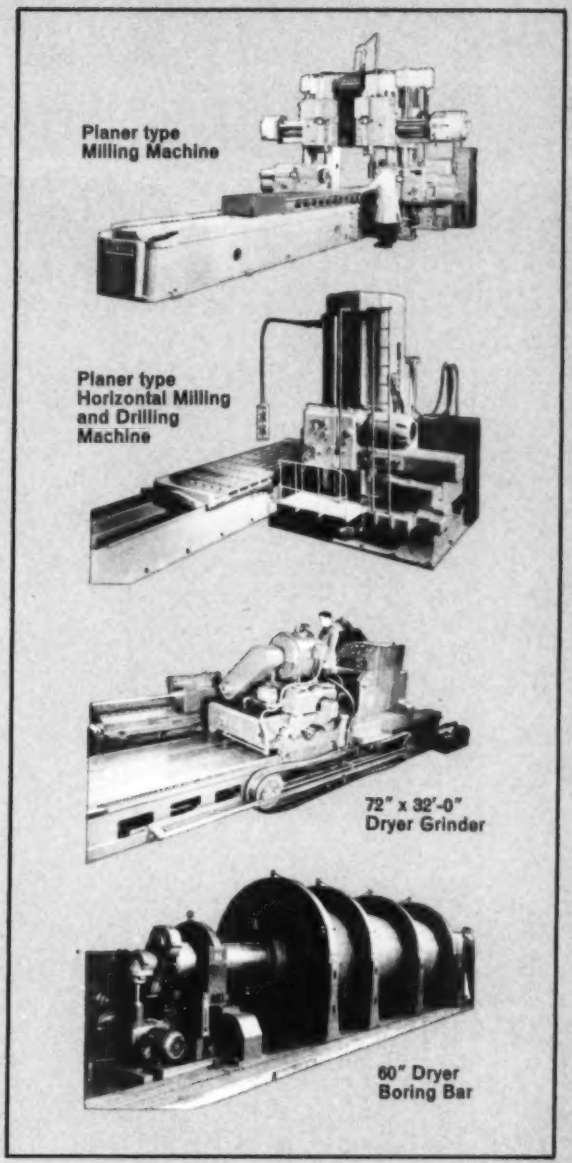
NEW MACHINE SHOP *(above)*, over 32,000 square feet, will house planer millers and large boring bars. A 20-ton bridge crane and 7½-ton floor-controlled crane will service these machine tools. Balcony area will provide increased room for stock storage, making more parts readily available to meet customer requirements.

CONSTRUCTION WORK *(below)* goes on high above floor of welding department addition. New welding shop (10,000 square feet) will provide space for larger, longer fabrications. An automatic welding machine, capable of handling beams 70 feet long, has been installed. Straighteners, grinders, and a sand-blasting unit have been added to the welding department's tool roster.

ADDITION *(above)* adds 11,000 square feet to suction roll and drive erecting floors, increases total erecting areas to over 33,000 square feet. Space will be used to assemble and check each unit before it leaves Beloit shops.

HUGE PIT *(below)* will provide additional 100,000 square feet of foundry space, more than enough to offset demand for castings created by machine shop expansion. Facilities will be installed for casting rolls and dryers 360 inches long. Pumps control seepage below level of Rock River.





Above: A few of the machine tools that are being added to Beloit shops during plant expansion.

your partner in papermaking

BELOIT

PAPER MACHINERY

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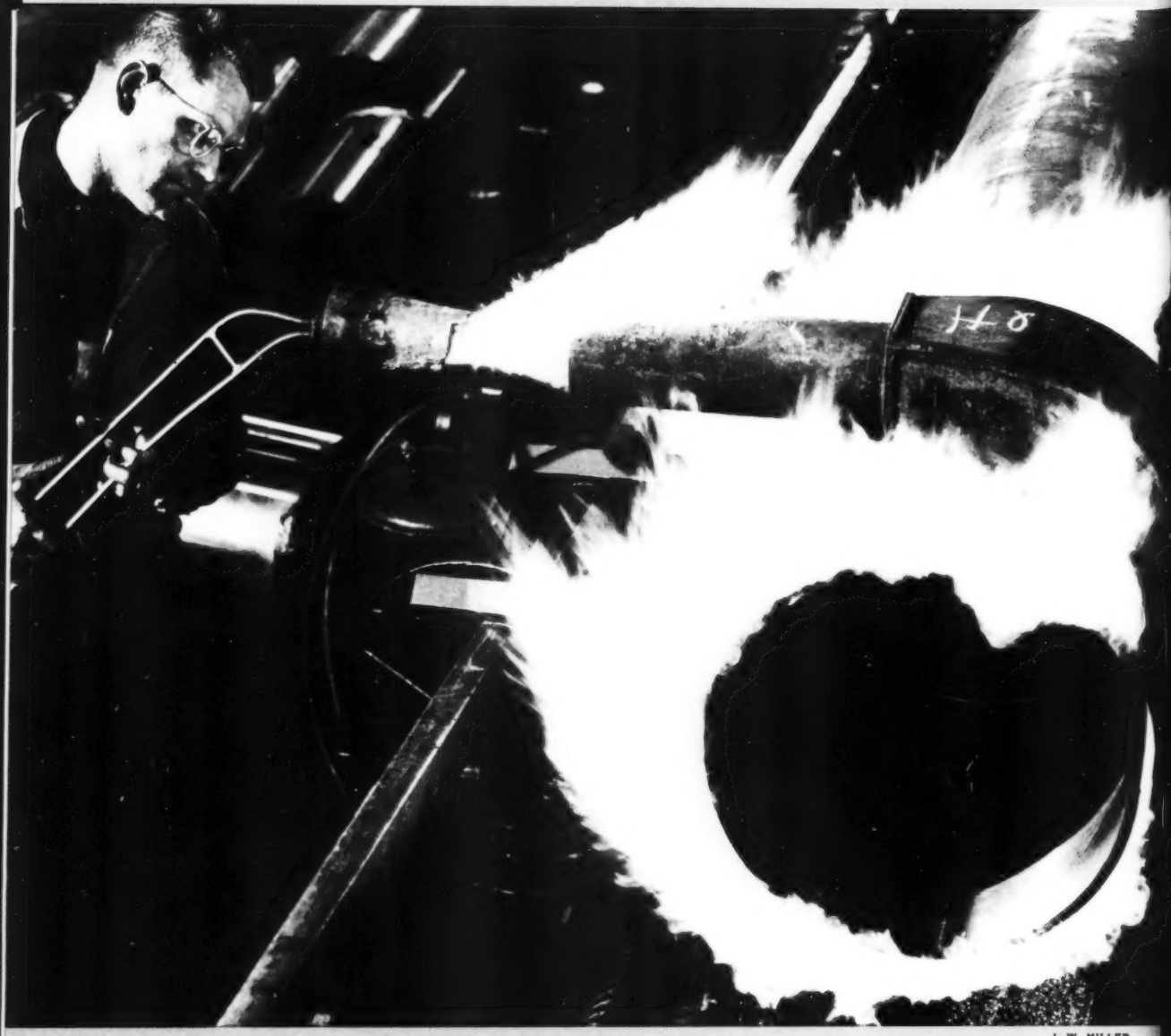
WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE



J. W. MILLER

"THE HEAT'S ON"—In the photograph above, "Pete" Landis, hydraulic press operator in the Beloit Iron Works pipe roll shop, is seen preparing a 20-inch reel spool body for the head fit. The head will be inserted into the machined and heated pipe. Contraction of the cooling pipe will clamp the head in place.

Super strength and extremely accurate balancing are requirements of Beloit reel spools, even more than of the other pipe rolls which carry the wire, felt, and sheet of paper in the papermaking process. Sheets rewound at winder speeds up to 6,500 feet per minute impose extreme surface speeds on these spools.

Years of trouble-free service are insured by Beloit's rugged design and meticulous manufacturing techniques based on almost 100 years of service to the paper industry. Beloit Iron Works was founded in 1858.

your partner in papermaking

BELOIT

PAPER MACHINERY

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WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE

CURRENT COMMENTS

Too busy making money . . . a further upward surge . . . and no "bust"

"What's new?" was the recent query put to a prominent paper manufacturer. "Nothing," came the reply, "we're too busy making money to make news."

There is no apparent let-down in the surge of business coming to the paper mills. Prices have not run wild—the industry feeling that it is the better part of good business to keep the customers in good humor. Contrast this to the get-it-while-the-getting-is-good philosophy.

The paper industry does not even show slight symptoms of slowing down for the balance of the year, though some economists think it would be a good sign were the mills to take it easy and catch their breath. These experts advise such action so that the industry will be ready for a still further surge upward next year.

In general, the stock market slump following the President's heart attack has not extended to business. The sentiment seems to be that, if there is any let-down on the general business scene toward the end of the year, the chance for a more serious set-back after the first of the year will be reduced.

No bulging inventories

Paper men are not worried. There is little hint that the heavy purchases of paper are going into inventories, but on the contrary are satisfying immediate consumption requirements. Until there is evidence of bulging inventories, the volume of demand is a bullish indication as concerns paper industry prosperity.

A recent business publication's poll of business sentiment indicates that sales are increasing faster than earnings, though profits for the last half of the year will most likely be higher than those for the first six months.

Credit curbs eased

One thing can be considered certain: If a slump in business appears even threatening, it can be taken as assured that the government will ease any present curbs on credit. In fact, most of the present curbs have been to check speculation rather than to curb business growth. With a presidential campaign in the offing, it can be taken for granted that the administration will take any practical steps to keep the current prosperity in the public eye. That may be a cynical view. But, it doubtless comports with the facts of political life.

Russian economists are saying that the United States is approaching the point where the bubble will burst and communism, thriving on hunger, will come into its own. According to all English-speaking economists, this is Russian wishful thinking and is not to be considered as even a remote possibility.

If there is a "bust" in the offing, it is not in the paper field, where the boom is a healthy demand, not an over-extended economy.

Financial Reports

Beginning with the Monday following Eisenhower's heart attack, the markets have had a series of "Blue Mondays," bringing all security prices to materially lower levels. After each sagging session, there has been a partial upward correction, but during each week the values dropped to new levels. Paper mill issues followed the general trend, though none suffered as severely as metals and motors.

Net incomes

Crown Zellerbach Corp. — Net income for three months ended July 31 was $8,799,000 as compared with $8,217,000 a year ago.

Kimberly-Clark Corp. — Net income for three months ended July 31 was $3,439,905, as compared with $3,014,906 for the comparable quarter a year ago.

KVP Co.—Net income for three months ended June 30 was $583,707, as compared with $472,425 for the 1954 period.

Nekoosa-Edwards Paper Co. — Net income for six months to June 30 was $1,446,857, as compared with $1,298,862 for a year ago.

Sorg Paper Co. — Net profit for the first half year was $278,433, as compared with $219,774 a year ago.

United Board & Carton Corp.— Net income for the 12 weeks ended August 20 was $120,502, as against $115,902 for the comparable period a year ago.

U. S. Envelope Co. — Net income for six months ended July 2 was $693,296, as compared with $677,990 a year ago.

West Virginia Pulp & Paper Co.—Net income for nine months ended July 31 was $9,138,000 as compared with $11,138,000 for the comparable period a year ago.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	Oct. 10, 1955	Sept. 9, 1955
A.P.W.	*4½-4⅞	8
Celotex	31¾	35⅛
Same Pref.	19¼	19⅝
Certain-Teed	25⅜	27½
Champion P. & F.	54	54
Same Pref.	*105-107	106
Chesapeake Corp.	56	59
Container Corp.	66⅛	70½
Same Pref.	*102-103½	–
Crown Zellerbach	53½	56¾
Same Pref.	103⅛	103½
Dixie Cup	48½	55
Eastern Corp.	26½	29
Federal P. B.	30½	33¾
Robert Gair	28¼	29⅛
Gaylord Container	52⅛	54⅛
Great Northern	80	86
Hammermill	30¾	33¼
International	103	108
Same Pref.	*104-104⅞	–
Kimberly-Clark	47¼	51⅜
MacAndrews & Forbes	51½	51¼
Marathon	30⅞	32⅛
Masonite	28½	29⅝
Mead Corp.	58¾	62⅛
Same Pref.	102	–
Same Sec. Pref.	*66⅛-75	70
Minnesota & Ontario	58	67
National Container	20	21
Same Pref.	34⅛	36
Oxford Paper	36⅝	40¾
Same Pref.	100	100⅞
Rayonier Inc.	32½	38¾
Rhinelander	34	37⅛
Scott	65¼	73¼
Same $3.40 Pref.	*93¼-95	95½
Same $4.00 Pref.	*102-104	–
St. Regis	38⅝	42⅞
Same Pref.	*103⅛-106½	–
Sutherland	44	46¾
Union Bag & Paper	92	96
United B. & C.	23¼	24⅛
United Wall Paper	1¾	2¼
Same Pref.	*18-19⅛	22
U. S. Gypsum	265	295½
Same Pref.	178¼	178¼
West Va. P. & P.	46½	47½
Same Pref.	107	106¾

New York Stock Exchange — Bonds

Celotex 3¼%		
Champion P & F Co. 3¼%	–	–
Mead Corp. 3%	–	–

American Stock Exchange — Stocks

American Writing	20⅞	20½
Brown Co.	15½	17¼
Puget Sound	59⅛	64½

* Closing Bid and Asked Prices.

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Whether it be BOLTON Hydro-truss Shell Fillings *(illustrated)*, complete EMERSON Jordans, or CLAFLIN Refiners, their performance depends on the combination of engineering skill and precision craftsmanship built into them. Linked together at Lawrence, Massachusetts, are the combined talents and experience of JOHN W. BOLTON & SONS, INC. and THE EMERSON MANUFACTURING DIVISION in this, our 50th year of service to the paper industry.

The Paper Industry

NOVEMBER 1955

Prepare for automation now

AUTOMATION is on the way in, whether we like it or not. Opposition to it may delay its arrival by a few years, but in the end we shall have to learn how to live with it. Its acceptance by society and industry is dictated by common sense. There is no more compelling force to institute a change than that which promises a greater economy, improved product quality and uniformity, and generally increased productivity—all of which are intimately associated with automation.

While the end result of automation promises to bring great benefits to all mankind, there is no question that the period of changeover can involve great social problems and dislocation of labor. There is also a sizeable expenditure involved in the acquisition of the required instrumentation, remodeling of operations, and in the training of personnel to install, operate, and service the instruments. All these factors have led management to view the advent of automation with a certain amount of reluctance and hesitation, while labor on the whole seems to be definitely opposed to it.

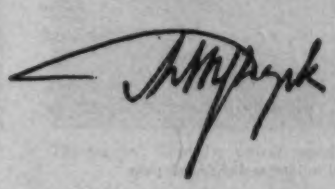
The fear of automation, however, is to a large extent that which accompanies all our ventures into the unknown. This fear can be lessened and the accompanying disruption and dislocation of labor controlled and held to a minimum if we learn beforehand to fully understand automation in all its aspects.

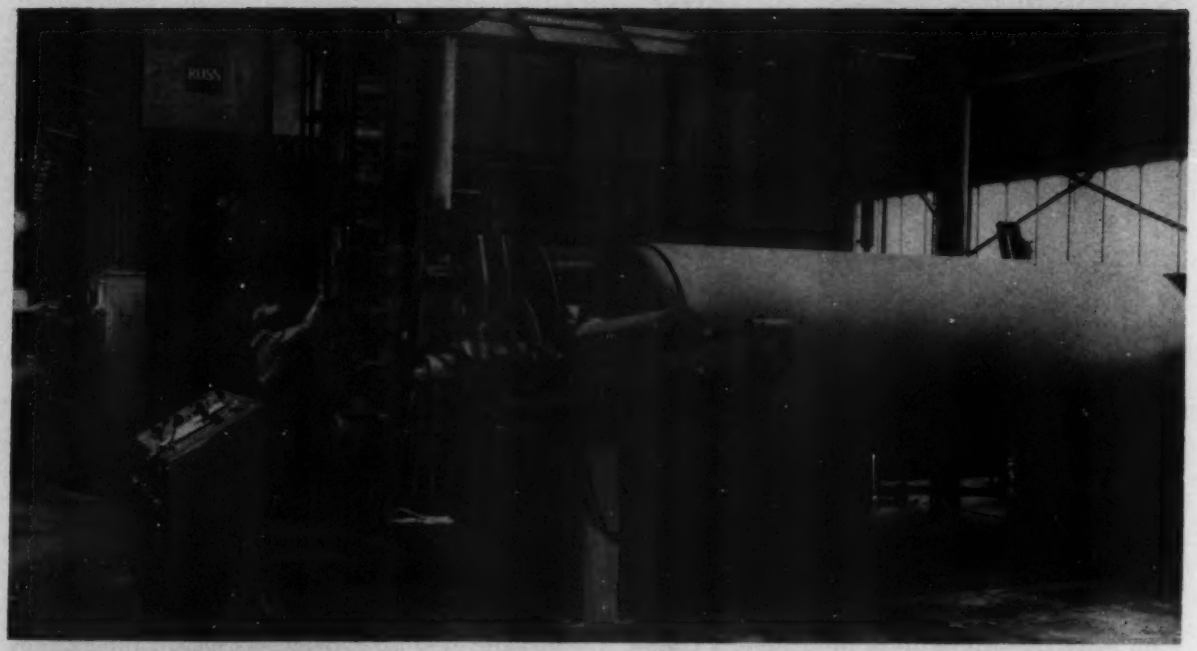
While human imagination has run wild — giving us at times a greatly distorted picture of automation — a few elementary lessons soon convince us that such terms as "electronic brain", "central thinking robots", etc., are highly misleading. Electronic computers or control instruments do not actually think. What they do is respond to an impulse thousands of times more quickly than a human being can ever hope to do. They can never do anything else but respond according to prescribed patterns along preset and precise channels. They do not have a choice in their approach to the problem nor in the method of solving it.

It is this quality of quick response and complete absence of bias that rapidly advances automation to a position where it becomes an indispensible attribute of modern living. As such, it functions as an effective servant to man, performing thousands of routine assignments, providing quick answers to complicated problems involving statistics and the higher mathematics, controlling processes within narrow limiting conditions—all adding up to better uniformity and quality of product and a tremendously increased productivity.

There is great need for education and dissemination of information on the subject of automation. Labor must be acquainted with the "job enlargement" concept of automation, so that the term will not be used as a "psychological weapon" to retard progress under the guise that automation would create permanent mass unemployment. We must also strip automation of any implication that it is too complicated for people to understand, that we may be creating a Frankenstein, or that people will become subservient to it. All these misconceptions, if allowed to grow in the public mind, will make the transition from manual to automatic control more painful than is necessary.

The transition period will be less distasteful if we prepare for it by informing ourselves and the public of what automation really is. We must learn to face the concept of automation with an open mind and, when it comes, make it work for us rather than allow it to paralyze the public's mind with fear or a feeling of incompetence and unpreparedness.





Beloit Iron Works corrugating medium machine with Ross Engineering hood

E. N. Wennberg, mill manager

Weyerhaeuser's new corrugated board mill uses NSSC* pulp

A. W. J. DYCK

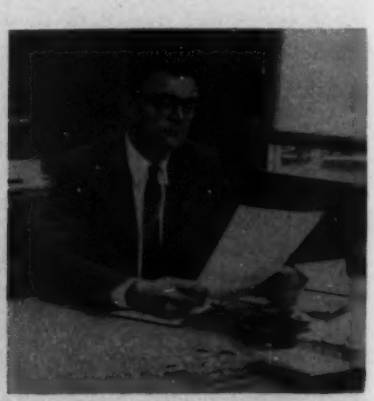
WEYERHAEUSER'S NEW corrugated board mill, with an output capacity of 175-200 tons per day of 9-point corrugating medium, went into operation at Longview, Wash., in June. The mill is also designed to run kraft papers and liner board.

Weyerhaeuser Timber Co., a past master in integration of wood processing, is highly proficient in grouping various operations on a single site. The new mill permits the utilization of hardwoods in addition to fir, hemlock, and cedar which grow on the company's 2,578,000 acres of timberlands, including the 14 tree farms which it maintains in western Washington and Oregon.

The mill uses hardwood logs, converts these into neutral sulfite semichemical pulp, and produces the corrugating medium on a new 165-in. paper machine which features many technical improvements. This article describes the highlights of the new corrugated board mill in operation.

Manager of the Longview mill is E. N. Wennberg. Assistant manager is

D. G. Felthaus, plant engineer



J. C. Brown, assistant manager

*Neutral sulfite semichemical pulp

Chip silos with Link-Belt double leg centrifical lift elevator

Digester house with Link-Belt chip-handling belt conveyor

Soda ash airveyor supplied by Fuller Co.

Joseph C. Brown; while D. G. Felthaus is plant engineer; Raymond R. Erickson is paper mill superintendent; A. H. Wicket is kraft mill superintendent, and Thomas W. Stewart is superintendent of power. Located in Tacoma, Wash., are Howard W. Morgan, vice president and manager of the pulp division, and Raymond E. Baker, manager of manufacturing.

NSSC pulping

Hardwood logs are conveyed by a horizontal two-strand and an inclined one-strand chain conveyor to the hardwood barker and chipper. From the chipper the chips are conveyed by belt conveyor to a double-leg centrifical conveyor feeding the chip silos.

A 36-in. belt conveyor, equipped with troughing idlers set at a 45° angle and fed by three rotary plate chip feeders, carries the chips from the silos to the 42i-in. shuttle conveyor which discharges chips into

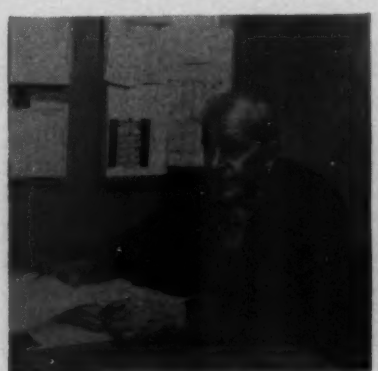
View of Yarnall-Waring 8-in. motor-operated blow valve at the Longview mill

three new digesters used for neutral sulfite semichemical pulping. The rotary chip feeders are driven by gear motors through 100:1 and 70:1 right-angle gear reducers.

The digesters, stainless steel clad and equipped with air cylinder for lifting the digester lid, are made of 1-in. A-212 grade B Firebox steel. They are 16-ft. inside diameter and 52 ft. long and made for operation at 125 psi working pressure. The digesters are equipped with circulating systems and strainers and strainer support lugs cast in ESCO Alloy 45 and 45L respectively.

The cooked chips are blown through 8-in. motor-operated blow valves into a blow tank equipped with agitator driven by a 75-hp 1150-rpm motor through a 30:1 gear reducer.

From the blow tank the cooked chips are fed by a pump, equipped with magnetic clutch drive, to three star feeders which supply, by way of a variable speed rotary valve, three compact cylindrical dewatering screens with stainless steel enclosures. From the screens the chips pass through chutes to three brown stock disk refiners equipped with 450-hp induction motors. From the brown stock disk refiners the pulp goes to two 11½ by 16-ft. vacuum washers driven by 25-hp motors through Dynamic couplings and 8:1 Herringbone reducers. A 16-in. screw conveyor and



R. R. Erickson, paper mill superintendent

A. H. Wicket, kraft mill superintendent

Thomas W. Stewart, power superintendent

18-in. rotor lift then feed the high-density pulp to the Semplate-lined 100-ton capacity high-density storage tank; while the liquor, containing about 8 per cent solids, is pumped to storage and thence to the evaporators in the kraft liquor recovery system.

The high-density tank is equipped with a high-density tank agitator driven by a 30-hp motor through a 7:1 Herringbone reducer.

Pulp refining

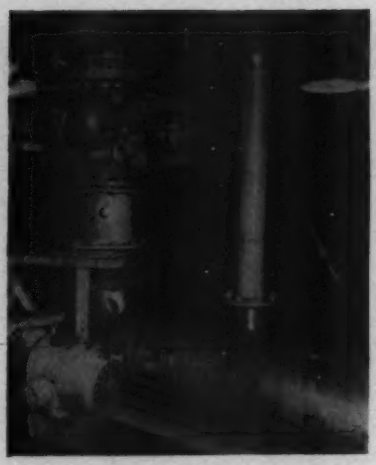
Raw stock and broke are pumped to an 8- by 16-ft. drum type vacuum saveall, equipped with Semplate-lined vat, rubber-covered steel drum and stainless steel fittings. The drum is driven by a 15-hp motor through Dynamic coupling and Herringbone reducer.

From here it drops to a Semplate-lined refiner chest equipped with agitator. The refiner chest feeds two 42-in. Double-D refiners, each driven with a 600-hp, 450-rpm motor. The refiners are equipped with solid stainless steel remachinable refining discs and are connected in such a way that stock can pass through them either in series or in parallel. Stock can also be recycled at will. The refiners work under a positive pressure of 30 psi at a stock consistency of 4-5 per cent.

From the Double-D refiners the stock goes to the Semplate-lined jordan chest equipped with agitator, 30-hp motor and 20:1 Herringbone reducer. It is then pumped to four jordans equipped with 61-in. long and 34- and 12-in. diameter plugs in which bars of variable width are interchangeable, a feature which proved of particular advantage in this mill since it was soon discovered that by operating a wider type of jordan bar a better refining job could be done on the semichemical pulp. Each jordan, having a peripheral speed of 4000 fpm at the widest diameter, is driven by a 400-hp motor.

Stock then goes to the stainless steel stuff box, from which it is fed to 11 No. 623-4 cleaners, each with a rated capacity of 30 tons per day. The cleaners operate at 0.7-1.0 per cent stock consistency in two stages, the secondary units cleaning rejects from the first stage. The cleaners are made with castings lined with Vinyl plastic which is easily replaced when worn. A new feature of the cleaners is the wire mesh on the surface of the castings which serves to make a perfect bonding between the casting and the Vinyl lining.

The refined stock then passes through the fan pump into the paper machine headbox.



View of J. M. S. Brinkley Co. stainless steel star feeders and cylindrical dewatering screen. The star feeders are driven by variable speed Lewis Allis Ajusto-Speeders

A pH recorder automatically controls the pH of the refined stock system.

Alum is added through a rubber-lined Rotodip feeder, equipped with auxiliary speed transmission for flow proportional pacing by pneumatic signal, and regular variable speed transmission for dose adjustment.

The paper machine

The 165-in. machine, designed to produce 175-200 tons of 9-point corrugating board or liner grades and to operate at a maximum speed of 1500 fpm, features a patented air-cushioned inlet suitable for operation with either vacuum or pressure.

The fourdrinier, incorporating the latest design high-speed shake and patented air diaphragm wire guide and automatic wire stretcher arrangement, is of the patented removable type. The forming area has a 165-in. wide wire, a bronze breast roll, stainless steel forming board, micarta-covered table rolls, and stainless steel deflectors.

The stainless steel suction boxes are fitted with end-of-grain maple covers and are carried in oscillating mountings. Vacuum is provided through pumps driven by 100-hp motors through 6:1 Herringbone reducers.

A stainless steel saveall pan serves the entire fourdrinier from the breast roll to the last suction box. It discharges directly into a tile-lined pit designed for maximum deaeration of the returning white water.

The press section is of the straight-through design. The first press is a straight-through suction press, the second a patented "air-bleed" press, and the third a smoothing press. The vacuum pumps of the first and second presses are driven by 125-hp motors through 6:1 and 7:1 Herringbone reducers, respectively. Top press rolls are carried on swing arms with air-loading equipment to apply and regulate nip pressure. The felt runs feature air motor-operated felt stretchers and automatic felt guides.

The dryer section, containing 51 five-foot diameter dryers of the high-pressure design, is divided into three sections. A size press is located between the 40th and 41st dryer, separating the second and third sections. Each dryer is carried in anti-friction bearings, the front side bearings designed to allow for thermal expansion. The dryers are provided with high-speed condensate removers and duplex steam fits. The latter are arranged so that carbons may be changed on the run.

Both top and bottom felt runs are provided with long-travel automatic felt stretchers and automatic air guides.

Broke from the calender stack and reel is dropped through a steel angle chute into a Quatro-Broke pulper. The pulper has a concrete tile-lined vat (18 ft. along center line of the paper machine, 14 ft. wide, and 10 ft. high) equipped with three Dyno Pellers and one vane type impeller. Two continuous discharge units are located directly in back of two adjacent Dyno Pellers stations feeding into a common stand pipe, from which stock is pumped to a broke storage chest and thence to the vacuum saveall. Broke from the last bottom dryer drops directly into the vat, which is recessed in a pit so that the top extends 36 in. above the basement floor. Thus slabs of paper may be charged from the basement level as well as through the broke holes.

Machine hood and ventilation

The hood over the dryer section is of panel construction, with Transite attached to welded angle iron frames by means of countersunk brass machine bolts. The exhaust from the hood is handled through six 60-in., three-bladed cast aluminum fans with stainless steel shafts and triple seal SKF pillow blocks. Each of the fans handles 50,000 cfm.

There are four air makeup units, two are located alongside the building and two on the roof. Each of these air makeup units handles 50,000 cfm of filtered and tempered air — two of the units supplying air to the basement and two through the roof to the diffuser boxes located in the trusses of the machine room.

Link Belt 36-in. belt conveyor with type 460 troughing idlers

Link-Belt 42-in. wide shuttle belt conveyor over digesters

Impco 11½- by 16-ft. valveless vacuum washers shown under Drew Engineering Co. hood

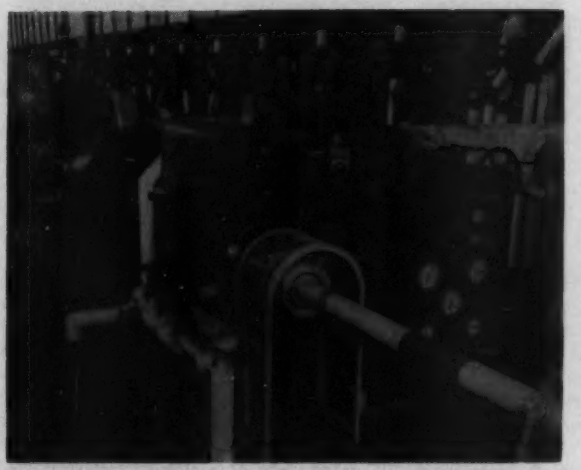
E. D. Jones Double "D" refiners with 42-in. stainless remachineable refining disks

Emerson 61-in. plug length refiners featuring interchangeable bars of varying widths

Bauer Bros. No. 623-4 cleaners. These are vinyl lined, each with 30-tons per day capacity

The Bingham Pump Co. fan pump

The Ingersoll-Rand Co. fan pump



Worthington Corp. 1000-hp multistage turbine and Beloit Iron Works differential drive. The turbine features cam-operated nozzle control

Rice-Barton Quatro-Broke pulper equipped with three Dyno-Pellers and one vane-type impeller

The size press located between the 40th and 41st dryer rolls

Beloit Iron Works reel and Model "M" winder

Machine drive

The paper machine drive unit consists of a multistage turbine with double helical single reduction gear rated at 1000 hp at the turbine speed of 5100 rpm and gear output speed of 1000 rpm. The turbine is designed for operation with initial steam pressure of 600 psi at 700° F. It exhausts at a back pressure of 135 psi.

Cam-operated automatic nozzle control insures economical operation at all speeds and loads. A governor of the oil relay type and suitable for at least 6:1 speed range maintains any given speed setting within very close limitations.

The unit is equipped with motor-operated speed changer, which provides remote control of the speed, and a solenoid trip so that it can be shut down in emergencies from a remote point.

The turbine operates the paper machine through a differential drive which mechanically locks the various sections of the machine together for precise and positive draw control. Each differential drive has its own oil pump to insure constant and positive lubrication. Clutches are of the latest multiple disk air-operated type, with all operating controls located at the tending side of the machine. The driving gears of the dryer section are completely enclosed in the back dryer framework.

Front and back dryer framework is of heavy-duty box type construction. The entire machine is serviced by a centrally located lubrication system.

Calender stack, reel, and winders

The eight-roll calender stack is of the open-side column type.

The heavy-duty kraft reel is designed to insure rolls of constant hardness in both the starting and secondary positions.

The heavy-duty unwind stand has air-operated brakes activated by a patented thru-tension control to maintain constant sheet tension during the winding operation.

The model "M" winder features motor-driven shear type slitters, air-activated rider roll, roll ejecting device, shaft puller and roll lowering table — all of which are of the latest design and reduce manual effort to an absolute minimum.

The machine room also houses two cranes. One is a 20-ton capacity crane with a 53-ft. 1-in. span and a maximum lift of 41 ft. It is an overhead running electric crane with two 10-ton trolleys.

The other crane is a 20-ton capacity crane with an 80-ft. span, hoist speed 18 fpm, trolley speed 120 fpm, and bridge speed 150 fpm. It is operated by pushbutton control from the floor and has variable speed magnetic control.

Principal equipment and suppliers at the Weyerhaeuser mill

NSSC Pulping

Agitators—Blow tank, high-density tank, raw stock chest	Improved Machinery Inc.
Breaker trap (1),	Sutherland Refiner Corp.
Chip feeders, rotary plate	Link-Belt Co.
Conveyor, chip handling (1), 36-in.	Link-Belt Co.
Conveyor, shuttle, 42-in.	Link-Belt Co.
Conveyors, log handling	Link-Belt Co.
Dewatering screens (3), compact, cylindrical	J. M. S. Brinkley Co.
Digester blow valves (3), 8-in. motor-operated	Yarnall-Waring Co.
Digester circulating systems	Electric Steel Foundry Co.
Digesters (3), stainless clad, with 1-in. Firebox steel	Chicago Bridge & Iron Co.
Digester strainers and support lugs	Electric Steel Foundry Co.
Evaporators, sextuple effect	Gen. American Transportation Co.
Gear reducers (8), right angle and Herringbone	Western Gear Works
Hood, vacuum washers	Drew Engineering Co.
Pumps, process	Worthington Corp.
Refiners, brown stock (3)	Sprout, Waldron & Co. Inc.
Rotary plate chip feeders (3)	Link-Belt Co.
Screw conveyor (1), 16-in. with rotor lift	Link-Belt Co.
Semplate lining in high-density stock tank	Stebbins Engineering & Mfg. Co.
Soda ash conveyor	Fuller Co.
Star feeders (3), with variable speed rotary valves	J. M. S. Brinkley Co.
Washers (2), 11½/16-ft. valveless vacuum	Improved Machinery Co.

Machine Room

Air makeup units (4), each handling 50,000 cfm	J. O. Ross Engineering Corp.
Broke pulper (1), with three Dyno Pellers and one valve-type impeller	Rice Barton Research Corp.
Calender, eight-roll stack	Beloit Iron Works
Crane (1), 20-ton capacity with 10-ton capacity trolleys, operated by push button control from the floor with variable speed magnetic control	Ederer Engineering Co.
Crane (1), 20-ton capacity with 10-ton trolleys	Whiting Corp.
Differential drive, mechanical	Beloit Iron Works
Dryer section, 51 five-ft. diameter rolls	Beloit Iron Works
Fan pumps (2)	Bingham Pump Co. Ingersoll-Rand Co.
Gear reducers (7), herringbone and right angle	Western Gear Works
Hood and exhaust system with 6 fans, each handling 50,000 cfm	J. O. Ross Engineering Corp.
Instruments	Foxboro Co.
Paper machine (1), 165-in., 1500 fpm with air-cushioned inlet, latest design shake, and air diaphragm wire guide	Beloit Iron Works
Press section, two suction and one smoothing press	Beloit Iron Works
Reel, designed for constant hardness	Beloit Iron Works
Semplate lining in wire pit, couch pit	Stebbins Engr. Corp.
Semtile seal-pit	Stebbins Engineering & Mfg. Corp.
Steam turbine (1), 1000-h.p. multistage turbine with cam-operated automatic nozzle control	Worthington Corp.
Unwind stand, with air-operated brakes	Beloit Iron Works
Vacuum pumps	Nash Engineering Co.
Winder, Model "M" with motor driven shear type slitters	Beloit Iron Works

Stock Refining

Agitators, jordan chest, raw stock chest, refiner chest, 10- and 5-ft. diam. propellers	J. M. S. Brinkley Co.
Cleaners (11), No. 623-4, 30-ton/day capacity each, Vinyl lined	Bauer Bros. Co.
Double "D" refiners (2), 42-in. with solid stainless remachineable refining disks	E. D. Jones & Sons Co.
Gear reducers (4), herringbone	Western Gear Works
Jordans (4), Emerson, 61-in. plug length, 34- and 12-in. diameter	John W. Bolton & Sons Inc.
Motors, jordan 400-hp	Westinghouse Electric Corp.
Rotodip feeders (2), rubber-lined with auxiliary speed transmission	B-I-F Industries Inc.
Saveall (1), 8- by 16-in. drum type vacuum	Dorr-Oliver Inc.
Semplate lining in low-density stock tanks, white water chest, tailings chest, stuff chest, jordan chest	Stebbins Engineering & Mfg. Corp.
Semtile vat for the Oliver saveall	Stebbins Engineering & Mfg. Corp.

Power Generation

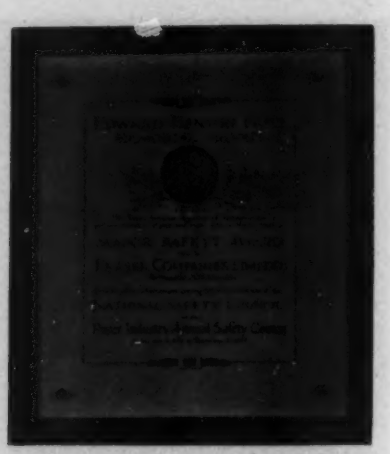
Condenser (1), 11,000 sq. ft., 127,000 lb/hour serving the 12,500-kw turbo generator	Ingersoll-Rand Co.
Pumps, condensate (2), No. 10APHC-6 serving the 11,000-sq. ft. condenser	Ingersoll-Rand Co.
Turbo-generator (1), 12,500-kw	General Electric Co.

Miscellaneous

Stainless steel oxidation tower packing (77,000 lbs)	Northwest Copper Works Inc.
Stainless steel pipe and fittings	Northwest Copper Works Inc.

Neophyte to Safety Champion in Five Years...

Fraser's Newcastle Mill wins Fritz Trophy



Edward Benton Fritz Memorial Trophy that was presented to Newcastle during the recent National Safety Congress in Chicago. Last year's winner was United States Gypsum Co. at Oakmont, Pa.

AS RECENTLY AS 1950 the Newcastle, N.B. mill of Fraser Companies Ltd. was none too proud of a 56.72 accident frequency rate.

Last month, the mill was declared the pulp and paper industry's grand champion in safety for 1954. Recipient of the Edward Benton Fritz Memorial Trophy for performance during that year, Newcastle can well boast its record. THE PAPER INDUSTRY sponsors the award.

One of North America's newest mills, the Fraser plant at Newcastle produces unbleached kraft pulp at a daily rate of about 150 tons.

This output was realized in 1954 through the efforts of an average of 280 employees who worked 579,000 man-hours without a disabling injury. The achievement brought the mill a No. 1 rating in Group D in the Paper Industry Safety Contest sponsored by the National Safety Council.

Newcastle's record doesn't comprise the 1954 contest year alone. As of June 1955 the mill's last reportable injury had taken place on December 8, 1952; and through December 31, 1954, the accident-free man-hours totaled 1,125,644.

The plant's safety story since the first full year of operation looks like this:

Year	No. of Accidents	Frequency Rate
1950	42	56.72
1951	5	6.86
1952	5	7.86
1953	0	0.00
1954	0	0.00

Inexperience to safety know-how

When the Newcastle mill (the newest in the Fraser organization) came into operation in 1949, more than 95 per cent of the employees were young and inexperienced. They had been recruited from the surrounding community and had little or no familiarity with the manufacture of kraft pulp. To be sure, many had had no industrial experience whatever.

While this certainly had its disadvantages, there was an aspect of the situation that was anything but discouraging. The paper mill neophytes had no fixed ideas on proper safety procedures and thus were more amenable to understanding, promoting and conducting a safety program.

From the beginning it was pointed out to them that common sense and safety go hand-in-hand. Prime mover and strongest supporter of the safety program has been the mill superintendent, R. B. Murchie.

Past Winners of the Fritz Safety Trophy

This year marks the 30th anniversary of the presentation by THE PAPER INDUSTRY of the major award in the annual Pulp and Paper Section Safety Contest sponsored by the National Safety Council. The first winner—in a contest that lasted but one month—was Nekoosa-Edwards Paper Co. at Port Edwards, Wis.

The succeeding contest ran for eight months; thereafter for six months until 1932, when the competition was extended to a full year.

In 1939, THE PAPER INDUSTRY Major Trophy became the Edward Benton Fritz Memorial Trophy and is awarded annually by Fritz Publications Inc. during the annual National Safety Congress.

Past winners have been as follows:

1925—Nekoosa-Edwards Paper Co., Port Edwards, Wis.
1926—Kimberly-Clark Corp., Neenah, Wis.
1927—International Paper Co., Riley, Maine
1928—St. Croix Paper Co., Woodland, Maine
1929—Kimberly-Clark Corp., Niagara Falls, N.Y.
1930—Crystal Tissue Co., Middletown, Ohio
1931—Champion Coated Paper Co., Hamilton, Ohio
1932—Cornell Wood Products Co., Cornell, Wis.
1933—St. Croix Paper Co., Woodland, Maine
1934—St. Croix Paper Co., Woodland, Maine
1935—St. Croix Paper Co., Woodland, Maine
1936—Hollingsworth & Whitney Co., Waterville, Maine
1937—Bird & Son inc., Philipsdale, R. I.
1938—Anglo-Canadian Pulp & Paper Mills Ltd., Quebec
1939—Anglo-Canadian Pulp & Paper Mills Ltd., Quebec
1940—Strathmore Paper Co., Woronoco, Mass.
1941—Mead Corp., Nashville, Tenn.
1942—U. S. Gypsum Co., North Kansas City, Mo.
1943—Flintkote Co. (Pioneer Div.), Los Angeles
1944—Flintkote Co.. (Pioneer Div.), Los Angeles
1945—Marathon Corp., Ashland, Wis.
1946—Kimberly-Clark Corp., Niagara, Wis.
1947—Strathmore Paper Co., Woronoco, Mass.
1948—Container Corp. of America, Carthage, Ind.
1949—West Virginia Pulp & Paper Co., Tyrone, Pa.
1950—National Container Corp., Jacksonville, Fla.
1951—West Virginia Pulp & Paper Co., Williamsburg, Pa.
1952—Ecusta Paper Corp., Pisgah Forest, N. C.
1953—U. S. Gypsum Co., Oakmont, Pa.
1954—Fraser Companies Ltd., Newcastle, N. B.

Plaque presented to the Newcastle mill by the National Safety Council during a recent meeting of the plant's safety committee to mark the mill's winning first place in its class of the 1954 competition. At the left is R. B. Murchie, mill superintendent; at the right, D. A. McAlary, supervisor of industrial relations for Fraser and president of the New Brunswick Accident Prevention Association

Collision accidents have been greatly reduced through use of this 18-in. convex mirror that has been installed at a dangerous corner in the Newcastle mill. Mirror is one example of safety devices that have helped in establishing the Fraser record, which has won for the plant the Edward Benton Fritz Memorial Trophy for 1954. Trophy was presented at the recent National Safety Congress in Chicago

Perhaps more than anyone else, he is responsible for the application of the Newcastle philosophy: "Safety in an industrial plant is basically a matter of the proper attitude on the part of everyone employed in it".

Indispensible to his success in this task is the cooperation of Fraser's supervisor of industrial relations at Edmundston, D. A. McAlary, and that of the mill safety officer, K. A. Alexander.

No precaution, no safety

In the Fraser safety program it is a cardinal principle: No matter how strident are the warnings, how elaborate the safeguards or how strictly the safety rules are applied, if a man does not approach his job in a common sense manner he can thwart all precautions and bring disaster to himself and his fellow workers.

A successful safety program must have the support of the chief executive. Properly imbued with the economic and moral necessity of safety, he can so stimulate the men reporting to him — and through them the entire organization — to achieve the utmost benefit from a safety program.

Safety gets an early start

Barely had Newcastle shipped its first bale of pulp than a safety program had been instituted. It began from scratch with few experienced men on the staff on whom to call for help in organizing the project.

Early in 1950 the superintendent formed a safety organization of working committees. With the advice and help of the Fraser safety director at Edmundston, drawing upon the extensive know-how of NSC and exerting imagination and initiative, the committees began to produce results.

One of the first actions of the safety personnel was to provide all mill departments with a liberal sprinkling of posters and other material. The aim was to constantly remind employees of the need for safe operations. Personal contacts and discussions supplemented the program.

As a rule, no incentives — such as prizes, bonuses or other awards — have been offered to stimulate safety. This policy, however, was recently abandoned — but just for a special occasion, when each man received an inscribed hygrometer marking two consecutive accident-free years.

An up-to-the-minute first aid room was set up with the advice of the company doctor. It has been fully equipped since the day the mill opened. A watchman trained in first aid is always on duty, and a nurse is in the mill one hour each day Monday through Friday.

Since the program's inception, the cooperation of all employees has been excellent. Union officers have given full support.

The door of relaxed vigilance

A safety organization must be close-knit and efficient, for accidents gain entry through the door of relaxed vigilance.

Still in effect is the general pattern established when Newcastle went into operation.

The mill superintendent accepts full responsibility for accident prevention and gives the program his unqualified support. He attends all meetings of the general safety committee, serving as a referee when necessary.

Conducting much of the day-to-day work of the committee are the chairman, D. A. Adams, and the secretary, Mr. Alexander. They were appointed by the mill superintendent. Mr. Adams is electrical superintendent.

These two men are responsible for:

1. Interviewing and instructing all employees on safety matters;
2. Ensuring that new employees are acquainted with hazards and how to avoid them;
3. Distributing safety posters and other NSC literature;

Prime movers in the Newcastle safety program are (l to r): D. A. McAlary, supervisor of industrial relations for Fraser; R. B. Murchie, mill superintendent, and K. A. Alexander, personnel and safety officer for the Newcastle mill

Safety committee at the Newcastle mill during one of its monthly meetings. Presiding as chairman is D. A. Adams (center foreground), electrical superintendent. To his right is R. B. Murchie, mill superintendent, and to Mr. Adams' left is K. A. Alexander, personnel and safety officer at Newcastle and committee secretary. Mr. Murchie is an ex officio officer

4. Keeping the safety bulletin board up-to-date;
5. Inspecting the mill daily for hazards and unsafe working conditions;
6. Stimulating safe practices and attitudes;
7. Investigating with the proper committee and ensuring that remedial measures are taken, and
8. Stimulating maximum and continuing interest in safety among all personnel.

Attendance is mandatory

The chairman and secretary are aided in committee work by the following members: the union president, plant engineer, department heads and the mill superintendent (ex officio).

There are two sub-committees: inspection and accident investigation. The former consists of three employees, each serving one month; the latter, three employees who serve one-year terms.

The once-a-month meetings of the general safety committee are not subject to postponement, and attendance is mandatory. A carefully prepared agenda is followed.

There is a free exchange of comments and ideas and discussions of special problems. At all committee gatherings, of course, the members review all first aid and accident reports for the previous month.

Recommendations may be made to management only after a review is made of suggestions from the inspection committee and a study is conducted of reports by the accident investigation committee.

As new hazards or bad practices are reported, every effort is made to discover the cause and to take corrective measures.

Safety progress is reported and proper credit given.

Miss Ann Gilbert, R. N., prepares treatment for an injured employee in the modern first aid room of the kraft pulp mill at Newcastle

From meetings of the general safety committee come recommendations for safe operating practice and for regulations regarding specific jobs. Enforcement is the responsibility of the foreman.

The committee passes on the acceptability for mill use of such items as protective clothing, equipment and devices.

And perhaps most importantly the group solicits and welcomes suggestions from any and all employees.

Hazards may be potential

The entire mill undergoes the "fine-tooth-comb" treatment during the week prior to the gathering of the general safety committee. This is the task of the inspection group.

These men check, among other things, unguarded machinery, sloppy housekeeping, defective tools and slippery floors. Operators in each department are questioned regarding potential hazards and are requested to suggest remedies, for which due credit is given.

A written report is submitted to the general safety committee. Any suggestions it may make are promptly considered and hazards minimized without delay.

All accidents or near-accidents come to the immediate attention of the investigating committee and the foreman involved. The scene of the mishap is visited and all witnesses interviewed — to determine the true history and causes of the occurrence. Necessary corrective measures are indicated.

The burden is with the neophyte

The success of any safety program rests largely on the shoulders of the new employee. And the responsibility for his proper conduct rests in turn on the shoulders of the safety organization.

He is interviewed by the chairman and secretary of the general safety committee, who acquaint him with Fraser's safety policies and program. The neophyte seldom gives thought to "safety first". The interview stimulates such thinking. The new employee is also made to realize that *above all* his personal welfare is at stake.

Regardless of past experience, the new man is given job instruction, is told that neither he nor his employer can afford losses from accidents. He is acquainted with protective measures undertaken by the firm and is asked to report any new hazards.

The neophyte is instructed to report immediately any injury — no matter how slight. Compliance with safety rules and regulations is a strict condition of his employment.

Fig. 1—Log debarker in operation at a southern sawmill

Fig. 2—Debarked sawlog

Pulp chips from sawmill leftovers*

J. A. HOLEKAMP

Southern Logging Engineer
American Pulpwood Association

TODAY IN THE SOUTH paper companies own over 12 million acres of land. Some industry representatives feel that by 1975 this forest acreage might approach 20 million, and that close to half of the required pulpwood demand by that time will come from these company-owned forests. The present cost of owning and managing this forest land, in many cases, is quite high. Also, the rate of return on the land is relatively low when viewed from investment standpoint. By owning the land, however, to assure a future wood supply, the paper companies justify their huge capital investments. In almost every case, the forest lands are under intensive forest management. Programs are administered by technically-trained staffs of foresters and logging engineers.

Costs of operation and demand on future wood supply dictate that these programs concentrate on producing maximum wood fiber growth on every acre of land owned, while at the same time keeping in mind those factors which can influence final cost per ton of pulp produced.

Sawmill leftovers

A rule of thumb measure indicates that a one-half cord equivalent of bark-free chips can be obtained from slabs and edgings incidental to the producing of each 1000 bd. ft. of lumber. Small, inefficient circular mills yield as high as three-quarters-cord equivalent per 1000 bd. ft. sawn. More efficient sash gang mills drop this yield to a four-tenths-cord equivalent per 1000 bd. ft. sawn. The South last year produced over 9 billion bd. ft. of pine lumber and will continue up through 1975 at about the same annual level of production.

To learn that no more than 38.-44 per cent of the sawlogs of the size designated (13.1 in. diameter and 83 bd. ft., 103 scale) ends up as a finished, saleable lumber product is somewhat startling. Percentagewise, utilization of this basic raw material by the lumber industry certainly shows need for improvement. Likewise, the pulp and paper industry can benefit by discovering more profitable uses for the lignin and hemicelluloses, which constitute about half the original weight of wood chips processed into wood pulp by cooking in a digester.

Why utilize sawmill leftovers

From the timber conservation angle alone, it seems logical to believe that a program devoted toward getting more wood fiber out of each pine tree harvested can be interpreted as being surprisingly similar and parallel to the ultimate objectives expected by buying,

*Abridged from a paper presented at the 36th annual convention of the APPMSA held in Cincinnati on June 14-16, 1955.

Fig. 3—Dumping chips from sawmill residues

Fig. 4—Lift truck unloading slabs and edgings

Fig. 5—Hydraulic slab debarker

Fig. 6—Debarked slabs and edgings ready for chipping

planting, protecting, and managing an equivalent volume of standing timber grown on the required acreage of land. By 1975, it has been estimated, the South will be using at least 2½ million cords of pine chips reclaimed from the slabs and edgings available from sawmills operating in the region.

Forest plantations of southern pine reach a generally considered reasonable growth rate of one cord per acre per year. In 30 years, an acre of forest plantation would yield 30 cords of pulpwood, provided each acre is clear cut at the end of that period and replanted the following year with seedlings.

This figuring indicates that a 2½ million-cord equivalent of chips coming from sawmill leftovers each year for a period of 30 years would be the same as buying, owning, and putting into production one or more forest areas totaling 2½ million acres in size, a total acreage equivalent to 21 per cent of the present company-owned forest land in the South. Building up a forest of this size would mean planting over 83,000 acres each year for 30 consecutive years.

Keep in mind that a peak reforestation of idle forest lands by the pulpwood industry in the South was during the 1952-1953 period. The industry planted 43 per cent of all the acreage planted during that time. This amounted to a total of 128,000 acres.

Another factor championing the efforts behind this program is: experience gained in the successful utilization of chips from slabs and edgings can light up the way lead-

ing toward utilization of such other types of mill wastes as planer shavings, sawdust, and bark. Utilization of presently considered non-commercial thinnings also fall into this category. By learning how to utilize pine-planer shavings alone might well make available more forest land acreage equivalent to the yield from another 1¼ million acres of pine land in the South.

The following figures will allow you to get an idea of the value of 3¾ million acres of forest land in the South.

The price paid for bare forest land is now often around $20 per acre. The cost of planting this bare land with pine seedlings frequently averages out at $12 per acre.

The industry is now devoting more attention to another phase of this over-all program: the debarking and conversion of rough slabs and edgings coming from the multitudes of small "peckerwood sawmills" (sawmills producing almost 55 per cent of the pine lumber available in the South today).

Important points about chips from sawmill leftovers

Further progress toward widespread use and acceptance of chips from sawmill leftovers is dependent on: (a) economic and labor supply conditions affecting availability of pine fiber in pulpwood form, (b) speed at which proper equipment is placed on the market, and (c) profit incentive made available to the lumberman, pulp mill operator, and any required intermediate party.

Bark removal constitutes one of the biggest problems connected with the utilization of sawmill "waste". It is in this field that woods organizations are carrying out research showing promising signs of bettering present debarking methods and equipment now employed at the mill. Most of the wood fiber now available for pulping from sawmill leftovers is in the form of unbarked slabs and edgings.

In most cases, the lumberman's first and uppermost concern will be lumber manufacture. Thus, assurance of high quality bark-free chips coming from sawmills will involve expense of lending technical assistance and instruction to operators. Close liaison by the paper mills with the sawmills will prove to be the only way of exercising proper quality control.

The sealing of chips by weight (based on oven-dry weight) is now favored over volumetric measurement by those West Coast mills considered leaders in this field. No longer can the industry afford to purchase large quantities of raw material subject to extreme variations traceable to human judgment and possible error. Techniques of measuring must reflect the most equitable and accurate scale possible.

Quantities of chips available

Some West Coast mills claim a wood fiber diet of 80 per cent mill leftovers and 20 per cent logs. This may be an exception. However, it is well known that many mills in this region depend on at least 40-50 per cent of their wood fiber supply coming from bark-free slabs, edgings, and trimmings. Sulfate mills on the West Coast during the year 1952 utilized mill residues equal to 73 per cent of their total wood intake.

Other considerations favoring the present program of deriving chips from sawmill leftovers are: (1) a more diversified source of wood fiber; (2) a means of helping to alleviate stiff competition for pine stumpage (stumpage has been continually rising in price over the past 10-year period); (3) bettering present day working relations between all wood-using industries; (4) strengthening programs of community relations, more specifically in areas supporting large company land holdings, and (5) developing and training younger staff members who some day are destined to cope with greater problems resulting from seemingly more frequent changes in business and world conditions.

From all indications, chips manufactured from slabs and edgings can be chips of creditable quality and uniformity. Slabs and edgings are derived from the outer portion of a tree, which is usually slower grown, consists almost entirely of sapwood, and has fewer knots and defects as compared with pulpwood stems. When compared with chips from the usual pulpwood, these chips often show a higher pulp yield. They also have less pitch and resin and generally reflect lower costs in pulping.

Present status of program in the South

Within the past year, over 40 of the South's larger sawmills have become engaged in the conversion of slabs, edgings, and trimmings into pulpwood chips. These mills normally make use of complete converting units, consisting of a log debarker, waste wood chipper, chip screens, and adequate chip handling facilities. In some cases, the mills actually operate their own system of transporting chips to nearby pulp mills. Equipping is now being done by eight manufacturers at the last count. This program, at least for the larger sawmills (those sawmills sawing 20M bd. ft. of lumber and more per day), is out of the "you try it first" category.

Estimates indicate that over 250,000 cord-units of chips will be made available this year in the South from pine sawmill leftovers. This figure is expected to continue to increase. Already the estimated volume in pine fiber made available this year to the pulpwood industry in the South can represent the equivalent of harvesting the annual growth from over 250,000 acres of sustained-yield pine plantations — forests allowed to grow to 30 years in age and yielding 30 cords per acre when harvested and replanted. This is enough wood fiber to keep a sulfate mill with a 450-ton daily capacity in operation forever.

Sawmill residues that same year accounted for only 6 per cent of the total domestic pulpwood production. By 1975 this utilization should increase to 20 per cent of domestic production. Of the 9.4 million cords of mill residues to be used annually throughout the industry by 1975, the West will account for 53 per cent; the South, 31 per cent, and the East, 10 per cent. It has been predicted that the South's sawmill "waste" usage, as against domestic pulpwood production, will grow to 3.5 million cords annually by 1975, or 11.7 per cent of total wood fiber intake for the year.

Some mills in the South eventually will receive as high as 30 to 40 per cent of their total wood fiber intake in the form of chips and materials coming from mill residues. Other mills, because of their location in respect to existing sawmills, may never receive any of this material. Still other mills might find a 10-15 per cent figure more applicable.

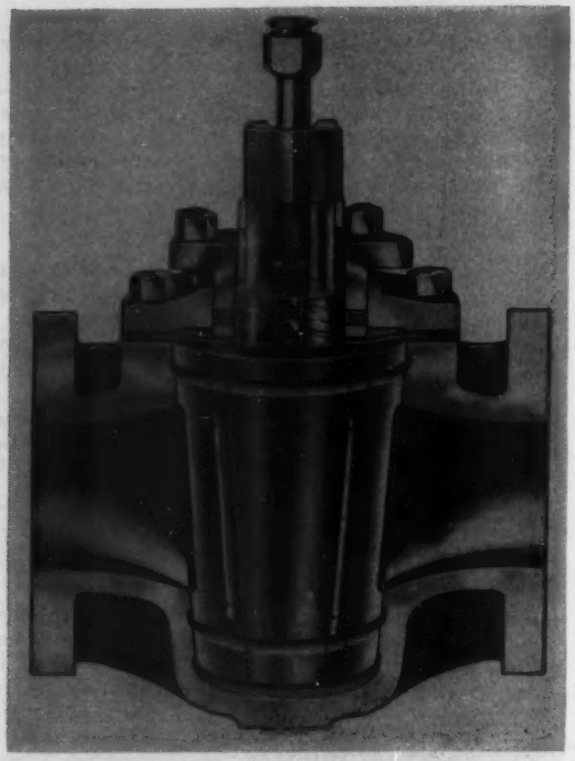
Cost of purchased chips

"Can chips available from sawmill waste compete costwise with chips manufactured from pulpwood?" This question can be answered best as follows: The progress of this utilization program will be most rapid if a profit incentive is available to the pulp mill

(Continued on page 756)

Lubricated plug valves offer long life, easy operation

T. H. M. TAYLOR*



Cutaway diagram of typical lubricated plug valve

Lubricated plug valves for general plant service offer many advantages and economies, including ease of operation, simple rugged construction and competitive price

A SIGNIFICANT PORTION of a plant's operating expense is represented by valve costs, which include initial purchase, maintenance, repair and replacement. In view of today's competitive market, it is important that such costs be kept at a minimum. Wider application of lubricated plug valves for general plant services can offer plant management and engineers substantial cost savings in this respect.

Both the plug and the gate valve are of the "block" or complete shut-off type, as compared with the globe valve which is used primarily for throttling service. Gate valves can be used for throttling but will not give tight shut-off after they have been used for throttling service. Plug valves on the other hand are often used for throttling where accurate adjustment is not necessary. However, for both types the primary service is positive open-close operation.

Design and construction

There are only three basic parts comprising the plug-type lubricated valve: (1) body, (2) cover, (3) plug—the plug being the only movable member.

While the plug is available both in cylindrical and tapered form, the latter is generally preferable. Nothing is simpler for valve actuation than the tapered rotary principle. Since the valve is opened and closed by rotation only, and not by raising and lowering the movable valve member, vital seating surfaces are self-protecting and self-cleaning. The valve does not contain enlarged pockets or recesses to collect sediment, scale deposits or other foreign bodies to interfere with valve action.

The tapered shape of the plug combines the tight fit advantages of wedge action with the sliding action of rotary movement. Properly lapped, the plug is self-seating and self-adjusting for wear.

A lubricated ground joint type of shoulder is used in preference to conventional stuffing boxes, which operate by gripping around a stem or rod. The shoulder joint is compact, produces a minimum of friction, and combines the functions of stem seal and thrust bearing.

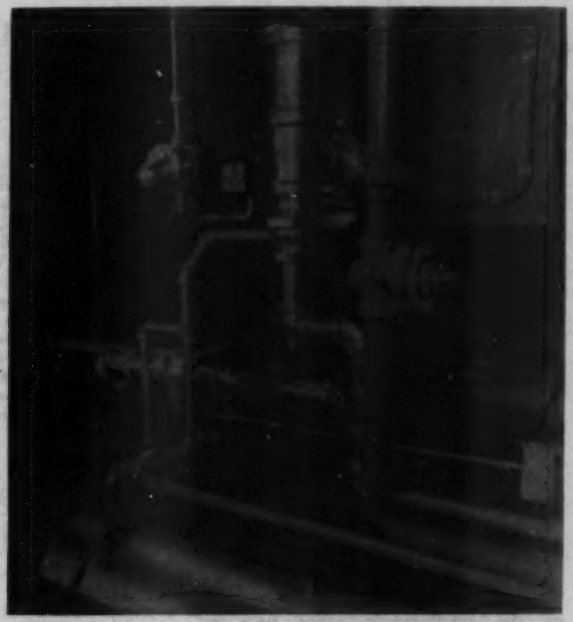
Application of the shoulder seal principle is the same for the various standard types, i.e., 2-bolt cover, which combines cover and gland in one piece; screwed gland and bolted gland. In all three types, thrust against the upper shoulder of the tapered plug is transmitted through a resilient cushion packing and a sealing diaphragm gasket. The sealing member is a thin flexible metal diaphragm of anti-friction and corrosion-resistant material.

The diaphragm assembly is clamped firmly together and does not rotate. As the valve is turned between open and closed positions, the ground surface at the top of the plug slides freely against the metal diaphragm. Leakage is prevented by the lubricated close fit between the two parts and the relatively narrow area of contact through which the plug-sealing thrust is applied.

One of the outstanding features of the plug valve is its quick-opening-and-closing operation. A quarter-turn fully opens or closes the valve. A stop collar on the valve gives positive indication as to the position for open or close.

*Chief engineer, Nordstrom Valve Div., Rockwell Mfg. Co.

Large valves used on low-pressure steam lines and small valves on gas supply line



Valve on left shut-off for gas supply to boiler, valve on top shut-off valve for hot water supply

Plastic sealing and lubrication

Pressure lubrication performs three important functions: (1) provides "jacking" action, (2) seals the valve and (3) reduces friction and wear to a minimum.

Lubricant pressure exerts powerful "jacking" action against the smaller end of the valve plug, momentarily unseating it. This action overcomes any adhesion and, because of the taper, creates a small space for a confined lubricant film between the plug and body. As a result, regardless of how long a period a valve is not opened, there is a positive means of unseating the valve, without having to use a hammer or wrench. Further, the "jacking" not only "puts the valve into operation" after long dis-use but provides lubrication at the same time.

It is important to note that unseating occurs only at the time of lubrication, when lubrication pressure higher than the line pressure lifts the plug; therefore, the seat is not exposed to the line fluid. Instead, the seat is actually being flushed clean by fresh lubricant.

Spring action is provided in the valve without the need for complex spring design by the resiliency of the shoulder seal packing.

The usual means of exerting lubricant pressure is an elongated screw, threaded into the outer end of the plug shank. Because of its small diameter and the use of a fine-pitched thread, the lubricant screw develops ample pressure on the lubricant, yet turns freely. These screws are often provided drilled and fitted with giant "button head" fitting for grease gun lubrication.

Application

For general plant service lines such as water, compressed air, low-pressure steam, fuel, hydraulic and so forth, standard semi-steel plug valves can be used. The valves are produced in a wide variety of metals and alloys for special services involving corrosion, high or extreme low temperature, pressure or other special operating conditions.

A useful and rather unique characteristic of plug valves is the ease with which they can be adapted for multi-port construction. In the three-way form, a single L-shaped passage connects any of two ports; with a T-shaped opening any of three ports are connected, and the four-way type has two cut-outs on opposite sides which connect any two adjacent parts of four ports with a quarter turn of the valve.

Maintenance

A recent survey of plug-type lubricated valves extending back over a 20-year period has indicated that the ratio of repair and replacement parts is less than 1 to 100. Put another way, lubricated plug valve repair parts over a period of years are about a tenth of the cost of other type valves. This favorable differential is due to the fact that there is little or no need for renewal of seating parts, packings, stems or re-welds.

Because of the tapered plug and lubricant sealed design of these valves, they are not restricted to one-way flow, i.e., the valve can be installed in either direction because it holds pressure in either direction. Flow can be reversed any time without the danger of leakage or jamming.

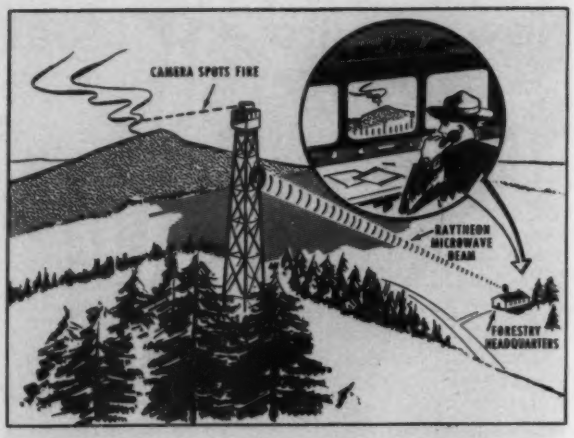
This feature means a constantly renewable valve seat. Instead of expensive repairs on seat and closing members, simple lubrication renews the sealing surfaces without necessity of dismantling the valve or even removing it from the line.

A common hazard to the life of valve seats is the abrasion caused by dust, dirt and debris in the line. This hazard is entirely eliminated in the lubricated plug valve if proper gland adjustment is maintained. Critical seat areas are fully lubricant sealed, and the lubricant is under pressure so that abrasive material cannot intrude. Any dirt or scoring material that may reach the plug is scraped off when the plug is turned back to open position.

Regardless of the line pressure, the plug valve can be relubricated as effectively as with no pressure. Lubricant injection builds hydraulic pressure within the valve to the required degree. In this way the plug can always be effectively lubricated and the jacking chamber under the plug adequately pressurized to permit easy turning. As a result, even if a plug type lubricated valve is unopened for extended periods of time, it can be easily opened, without difficulties of galling or freezing.

TV goes to the tall timber

HARRY J. MILLER



Newest weapon to fight the staggering annual loss to timberlands from forest fires is an electronic firewatch system. A rotating TV camera spots the blaze and beams the picture to forest ranger headquarters. Two or more unattended towers supply cross bearings to pinpoint the blaze

THE TALL TIMBER may go on television soon, for the piercing eye of TV is now to be used to protect our precious forest preserves.

Recently demonstrated to members of the Forestry Conservation Communications Association was an "Electronic Fire Watcher." *This gadget is a portable and automatic television station that can be perched atop a lonely fire tower to record the forest scene below, for miles around.

Parked deep in the woods, the "fire watcher" will relay television pictures of the surrounding areas back to forest headquarters, where the rangers can spot fires as soon as they start, helping to thwart the holocausts that annually destroy $60 million dollars' worth of timber.

The all-seeing cameras rotate automatically but can be stopped, started and reversed by rangers many miles away. Without the need for wires or cables, the picture picked up by the slowly revolving camera is electronically transmitted to forest headquarters by a microwave beam.

Instead of plunging over trackless terrain, the forest ranger can do his fire watching on a series of television monitors, each revealing forest conditions from towers spotted miles apart.

The cameras not only pick up the many miles of rugged timberland, lakes and mountains that comprise the ranger's domain, but they also show an azimuth reading so that the ranger can tell exactly where the camera is looking. By simple triangulation, a fire miles away can be pinpointed by matching the azimuth readings from two or more video pictures.

Fond hopes and predictions

Ever since the first television broadcast, the forest service has fondly hoped and predicted that the eye of the television camera would aid the human fire watchers in keeping tabs on vast stretches of the nation's future lumber supply. But the cost of stringing miles of costly coaxial cable has been, and still is, prohibitive. Besides, such cables would be at the mercy of falling trees and branches, high winds and ice, and the forest fires themselves.

The development of the suitcase-size transmitters* and the microwave link enables one man to keep a sharp eye on thousands of acres of priceless timberland. Could be that in the immediate future the ranger may just sit back in the safety and comfort of his headquarters, ready to report the show.

Forestry officials who saw the demonstration hailed the new equipment as a milestone in the progress of tele-

*Made by Raytheon Co., Waltham, Mass.

(Continued on page 756)

Visiting and local forestry officials recently viewing a demonstration of the electronic firewatcher. They included FCCA representatives from every state in the union, along with federal conservation men and forest management representatives from numerous pulp and paper firms

New results and ideas in mechanical pulping*

The Grinding Process

(Original paper by D. Atack, Pulp and Paper Research Institute of Canada)

▶ More information is needed about what takes place at the dimensional, i.e., the microscopic, level of the fibers during grinding.

▶ In a conditioned stone there is a preferred direction of grit orientation, and hence a preferred type of loading. It is thought that preferred straining is brought about along the diagonal of the square fiber, and that the fiber is plucked from its matrix middle lamella along adjoining edges—giving a type of wedge compression removal and resulting in a fiber deformation which also plays a large part in such processes as beating and refining. Grinding is viewed as a very special type of refining or beating.

Recovery of Groundwood Fine Screen Tailings

(Original paper by E. P. Walsh, Anglo-Canadian Pulp and Paper Mills Ltd.)

▶ The Reisten refiner for the recovery of groundwood fine screen tailings, first installed at the Anglo-Canadian mill in September 1953, was such a success that a year later the company operated a refiner center consisting of four Reistens (imported from Germany) and related screening and thickening equipment. The machine, equipped with three sets of 40-in. diameter disks (each set having one stationary and one rotating disk, slotted and with abrasive tackle), has a shaft speed of 190 rpm, a capacity of 10 tons screened stock per 24 hrs., and power consumption of 15 hp. per ton at a freeness of 130-150 C.s.f.

Refining of Groundwood Rejects

(Original paper by E. Gardiner and R. Stafford, Spruce Falls Power & Paper Co. Ltd.)

▶ The refining of groundwood rejects is best carried out at consistencies as low as 1 per cent. This results in such advantages as (1) more uniform and better refined stock quality; (2) reduction of the load of tailings through the screening system, thereby improving screening efficiency, and (3) uniform loading which permits steady operation of refiners at peak motor loads and greatly reduces refiner supervision.

▶ Refining of groundwood rejects at the Spruce Falls mill is done not only for economical reasons (adding the refined rejects to the pulp instead of discarding them), but also for the purpose of producing a quality of fiber which matches or improves the over-all quality of the groundwood pulp.

▶ Operating at 1 per cent consistencies has also made it possible to replace the screw conveyors in the refining system with a stainless steel header which runs directly over the bank of refiners and carries the rejects from the thickener to the refiner by gravity flow.

Interpretation of Groundwood Production

(Original paper by Karl H. Klemm, Northeastern Paper Products Ltd.)

▶ A working concept for the process of wood grinding is developed which stipulates that, for good quality groundwood production, the temperature in the grinding zone should reach 350-380°F. This is the temperature range where lignin is plasticized. (This view is in opposition to that expressed by D. Atack, Pulp and Paper Research Institute of Canada and others who believe that the grinding temperature does not greatly exceed 100°C.)

▶ This working concept stresses the importance of high-temperature grinding and heat economy in the white-water system of groundwood mills. It is demonstrated that a 2 to 3 per cent decrease in specific power consumption is obtained for each 10°F. increase of the white-water temperature.

▶ The process, involving the plasticization of lignin, is referred to as the "preinitial process", while the actual removal of fibers from the pre-softened layer of the wood block is referred to as the "initial process". The rate of movement of wood toward the stone during "initial grinding time"† (which for good quality groundwood should be in the range of 50-60 microseconds) is the most important feature during this part of grinding. For good quality groundwood, this rate of movement should numerically approach the average fiber diameter of the wood used. High freeness is obtained if the "initial grinding factor", i.e., ratio of the "traveling rate of wood" to "average fiber diameter", is in the range of 1.1-1.3, and low freeness is obtained if this initial grinding factor is in the ranges of 0.7-0.9. If the "initial grinding factor" is equal to 1, the probability is that single fibers are being removed from the wood. If this factor is considerably in excess of 1, the probability is that more fiber bundles than individual fibers are being removed.

▶ To properly evaluate groundwood quality in an over-all groundwood control program, composite samples should be taken from the deckers or filters (grinder pit samples relate only to the operation of individual grinders). Of particular value is a knowledge of the structure and the classification of groundwood components in these samples — and especially the evaluation of the components of the "fines" fraction, which is made up of "fibrilplasma" and "flour". Fines with a favorable structure have a high content of "fibrilplasma", and those showing an unfavorable structure have a high content of "flour".

▶ A study of the influence of pulp stone grit on groundwood quality shows that, for the production of high-quality groundwood, relatively coarse grit stones should be used. The fibers are thicker and stronger from coarse grit stones and thinner and weaker from fine grit stones. As the surface of the coarse grit stone dulls, fibers become more fibrillated, and the structure of fibers as well as that of the fines improves. This ties in directly with the sharpening of stones, and two of the author's rules stipulate that the intervals between sharpening be made as long as possible, that relatively heavy sharpening be used, and that the high freeness obtained during the self-conditioning period of the stone be compensated by extending the slow-down period of another stone. An exact balance between the surface condition of the different stones is necessary to maintain a constant and adequate quality of groundwood.

Research on Pulpstones

(Original paper by M. S. Kraft and K. H. Kalbfleish, Norton Co.)

▶ A joint study was undertaken by Norton Co. and Great Northern Paper Co. with the view to determining the effect of various grinding conditions

*Extracted and interpreted by A. W. J. Dyck from papers presented at the 2nd International Pulping conference held at Poland Spring, Maine, September 19-21, 1955, a joint meeting of CPPA and TAPPI.

†The ratio of width of grinding zone to the surface speed is known as "initial grinding time."

on pulpstones and pulp quality and obtaining a better knowledge of the temperatures and stresses in the pulpstone during these conditions.

▶ Correlating the radial temperature differences and the corresponding stress patterns developed in the stone during shutdowns, the conclusion is that the stresses resulting from a 24-hr. shutdown are of the most severe type to which the stone was subjected.

▶ Stresses produced during prolonged surface burning — such as caused by prolonged removal of showers, the introduction of steel spikes, sledge hammer heads, or granite blocks — were no greater than 38 per cent of the stresses developed with shutdowns and startups, although considerable surface damage and glazing resulted under these conditions.

▶ The results present a good argument for continuous operation, without shutdown, to increase productivity and the productive life of a pulpstone.

Bleaching Groundwood with Hydrosulfite

(Original paper by D. B. Sparrow, Scott Paper Co.)

▶ The variable and unpredictable results obtained from the use of hydrosulfite in groundwood bleaching have been corrected through the use of sodium tripolyphosphate with the hydrosulfite bleach. This results in more uniform bleaching and, at the same time, gives a higher brightness than is obtained with the use of hydrosulfite alone.

▶ This study has led to the erection of a novel bleach plant, which utilizes pulp directly from the grinders. Maximum bleaching efficiency is obtained with temperatures of 160-180°F., pH 5-7, rapid mixing, and exclusion of air during bleaching. Reaction time in airtight towers is 15 minutes at 170°F. The plug-flow type of movement of the reacting pulp through the towers minimizes the mixing of pulp during various stages of bleaching.

Grinding Pretreated Hardwoods

(Original paper by Axel Hyttinen and E. R. Schafer, Forest Products Laboratory, U.S. Dept. of Agriculture)

▶ Mild treatments with neutral sulfite solutions before grinding increased the freeness and the long fiber fraction of several hardwood groundwood pulps. Progressively more drastic treatments with neutral sulfite solutions increased the strength and density of the groundwood pulp, but decreased the brightness and the opacity of the papers made from it. Some chemigroundwood pulps approached neutral sulfite semichemical pulps in strength. The considerably darker chemigroundwood pulps were easily brightened in a single-stage hypochlorite treatment and could be used satisfactorily in book, bond, and toweling papers. The hardwoods used in this experiment were quaking aspen, sweetgum, red alder, black tupelo, sugar maple, red oak, and cottonwood.

▶ In five different treatments used, the time-range at maximum pressure and temperature was 1-5.5 hrs.; the temperature range 125°-155°C; the pressure range 100-150 psi; and the liquor concentration 0.5-1.5 lb. per gal. The penetration of sodium sulfite into the log was fairly complete, even at the 1-hr. treatment at maximum pressure.

Caustic Treatment of Aspen Groundwood

(Original paper by W. J. Foote and S. R. Parsons, Consolidated Paper Co.)

▶ Additional experiments made by the authors confirm previous findings that the treatment of groundwood pulps with caustic soda increases the tensile and bursting strengths and decreases yield, brightness, and bulk.

▶ These results were applied on a commercial scale using aspen groundwood. The treatment consisted of the addition of 5 per cent caustic, and 2-2.5 per cent sodium peroxide was required to bleach the pulp to the required brightness of 67. While ordinarily groundwood pulp has a bursting strength of 40 and a bulk of 2.1, the caustic soda-treated and peroxide-bleached aspen groundwood showed a busting strength of 72 and a bulk of 1.56.

▶ With the qualification that current testing procedures do not satisfactorily evaluate a pulp, the authors state that for the purpose of book papers, a 100 per cent aspen pulp (45 per cent of which was treated with caustic soda) is equal, in most respects, to a groundwood pulp made from 50 per cent spruce and 50 per cent aspen. The relative costs of making spruce-aspen and aspen-causticized aspen groundwood pulps are about equal.

TV Checks Forest Fires

(Continued from page 754)

vision science, and predicted that it will not only become a standard tool of forestry work, but will greatly reduce the cost of maintaining an effective firewatching service.

A well-planned network of electronically-equipped firewatch towers could be kept in operation without regard to the weather, since under the most severe conditions of summer heat and subzero cold the microwave equipment in the fire lookout towers operate unattended, with a minimum of maintenance.

Since the pictures that it relays are clear, steady and highly detailed and unaffected by atmospheric conditions or other common forms of interference that plague television broadcasts to the home, forestry men expect the installlations to help catch poachers, firebugs and other lawbreakers who threaten the nation's timber supply.

Pulp Chips

(Continued from page 751)

operator, the lumberman, and any required intermediate party. It also is axiomatic that the concentration of profit with any one party, to the exclusion of others, will retard the overall progress of the program. When stock is taken of the progress made with the program within the past two to three years, one can decide for himself whether profit incentive has been available to all concerned. Some pulp mill representatives claim that chips coming from sawmill waste do not cost any more than chips manufactured from pulpwood; other representatives are non-committal.

Keep in mind that the competition for the sale of an industry's manufactured product makes it imperative that the cost of production be reduced whenever possible. This can be done either by increasing efficiency of operation or by utilizing a heretofore unused form of raw material available at a lower cost, or both. Based upon a large majority of the installations operating today in the South and on the West Coast one cannot help but feel that a majority of all parties concerned are finding it economically feasible to process and utilize a material once considered waste.

Quality of chips

To cover quality of chips, the following is a set of specifications laid down by a southern pulp mill purchasing screened pine chips from sawmill waste:

"Chips must come from green sound slabs, edgings, and trimmings, and must be clean cut. A possible rejection is in order for shipments of chips testing outside of a moisture content range of 50 per cent plus or minus 5 per cent by weight. Eighty per cent of the chips purchased must be re-

(Continued on page 786)

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Although introduced a relatively short time ago the Camachine Imperial already serves in leading mills on materials varying from lightweight fine papers to heavy board. In all cases the Imperial on-the-job has fulfilled every expectation... with ample capacity in reserve for future production increases.

INVESTIGATE the complete story of the Imperial as a sound investment. Let the facts show why the Imperial is the most productive, most adaptable and most durable mill-type slitter and winder you can own.

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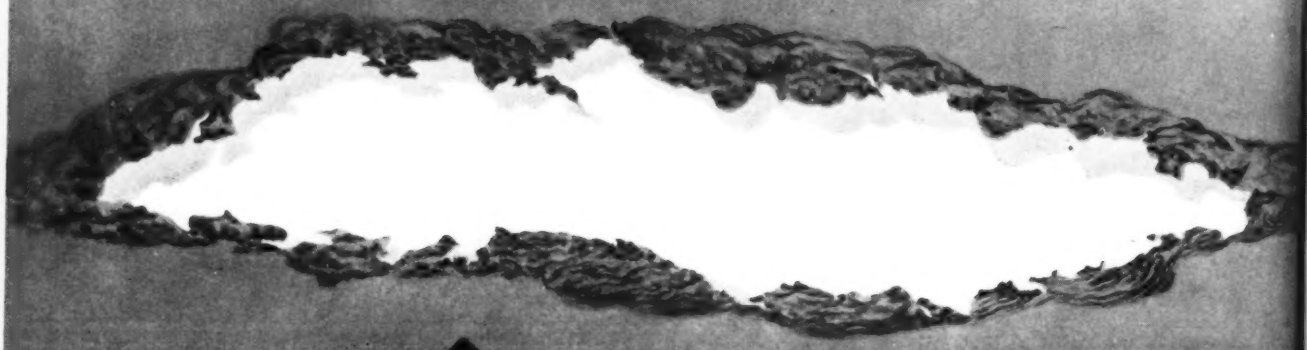

2

One product can solve your slime problem economically!

No need to alternate with any other slimicides! SLIMODYN contains three powerful heavy metal toxicants for use in most white water systems. MICRODYN is specially formulated for application in paper mills where mercurials are objectionable. SLIMODYN and MICRODYN, being completely dispersible in water, are suitable for spraying after washups, and adsorb readily on surfaces to build a residual germicidal activity. They are relatively unaffected by changes in pH; will not shorten wire life or cause foaming.

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1955-56 officers of the Pulp & Paper Section are (l to r): R. C. Belknap, secretary and membership chairman; Dallas E. Henry, retiring general chairman; Francis H. Wagner, new chairman; Fred O. Soughton, vice chairman and program chairman, and Earl F. Ripstra, news letter editor

Annual luncheon head table (l to r): Dallas E. Henry, retiring chairman; Mrs. Francis H. Wagner; Andrew J. Schroder II of Scott Paper Co., speaker; Fred O. Soughton; Francis H. Wagner; R. C. Belknap, and Frank Pater, staff representative of the National Safety Council

Management's role in accident prevention keynotes

Pulp, paper meetings at 43rd National Safety Congress

THE VITAL PART played by management in a successful accident prevention program set the theme of Pulp & Paper Section meetings during the National Safety Congress held October 17-20 in Chicago.

Approximately 200 safety leaders representing pulp and paper firms from throughout the United States and Canada attended the sessions, which were held at the Conrad Hilton Hotel.

Keynoting the 1955 gathering, Andrew J. Schroder II, vice president in charge of industrial and public relations for Scott Paper Co., called for perfection in safety effort. Describing a safety program as "1 per cent engineering and 99 per cent human relationships," Mr. Schroder declared that a chart showing safety performance doesn't reveal the grief and tears that accompany a serious accident.

Scott Paper, the speaker continued, is doing a good job on rate reduction but won't be really satisfied until no lost-time injury is re-

▶ Fraser wins Edward Benton Fritz Memorial Trophy . . . Consolidated Paper takes Arthur Hoyt Scott award . . . steady accident reduction lauded by delegates to Pulp & Paper Section

Howard E. Whitaker, president of the Mead Corp.

Henry W. Rigby, vice president of Champion Paper & Fibre Co.

Earl R. Wallace, safety engineer for Eastman Kodak Co.

Presentation of the Edward Benton Fritz Memorial Trophy is made by A. Scott Dowd (l), president of Fritz Publications Inc., to R. B. Murchie, superintendent of the Newcastle, N. B. mill of Fraser Companies Ltd.

Arthur Hoyt Scott Trophy is awarded to Julius A. Draper (l) of Consolidated Paper Corp. Ltd. by R. W. Wood of Kimberly-Clark Corp., last year's winner. In the background is Arthur J. Schroder II of Scott Paper Co., which sponsors the annual award

ported from any of its plants. Perfection, he declared, must be the ultimate goal of every safety director. One serious mishap bringing injury or death is a blot on the record of any plant no matter how low its frequency rate may be, for the grief of the victim's family is on the conscience of the company. That low frequency, Mr. Schroder said, cannot ease the suffering. It is not important to the family.

Francis Wagner New Chairman

Named general chairman of the Pulp & Paper Section for the 1955-56 year was Francis H. Wagner, director of safety for the Mead Corp. at Chillicothe, Ohio. He succeeds Dallas E. Henry, safety coordinator for the Southern Advance Bag & Paper Co. Div. of Robert Gair Co. Inc.

Other principal officers elected to serve for the coming year include: **Vice Chairman and Program Chairman,** Fred O. Soughton, services and safety supervisor for LongLac Pulp & Paper Co. Ltd. at Terrace Bay, Ont.; **News Letter Editor,** Earl F. Ripstra, personnel manager for Container Corp. of America in Chicago, and **Secretary and Membership Chairman,** R. C. Belknap, personnel manager for Bemis Bros. Bag Co. at East Pepperell, Mass.

A More Aggressive Attitude

A real determination to score progress in accident prevention must be the goal of top management in the pulp and paper industry, Howard E. Whitaker declared in an address before one of the general meetings. Mr. Whitaker is president of the Mead Corp. at Dayton, Ohio.

"The responsibility rests with the top management of the industry," he declared, "and I suggest that our approach should take the form of more concise and specific recommendations for action. I propose that definite objectives be established in each organization for the various phases of accident prevention work, and that the safety plan carry with it a definite time-table, actual dates for scheduling the accomplishments of results.

"I believe that every activity in connection with safety can be so scheduled—improved housekeeping, educational work, studies of accident hazards, and all the rest. I am convinced that aggressive thinking along these lines, just as it does in sales and production planning, can be transformed into specific actions —action by top management, action by supervision, action by the entire organization under direct leadership—and will produce results which will change the record."

Pointing up the progress made in safety by the pulp and paper industry over the years, Mr. Whitaker warned that there is still room for much improvement. ". . . we still have accidents—altogether too many of them," he declared. "You know and I know that most of these accidents can be prevented."

Declaring that the accident rate for the pulp and paper industry is just about average for all kinds of manufacturing, Mr. Whitaker said that, "The surprising situation is that the record for pulp and paper is still trailing behind several other industries which present more serious problems in exposure. It is safer today to work in an explosives plant or in heavy manufacturing such as automobiles or the steel industry than it is to work in a paper mill.

". . . The difference must be in

Dallas E. Henry (l), outgoing general chairman of the Pulp & Paper Section, receives a citation for his work from Frank Pater, staff representative of the NSC. At the right is Francis H. Wagner, director of safety for the Mead Corp., new section chairman

Pulp Manufacturing Session features (l to r): D. V. Hill of the Mead Corp., H. G. Young of West Virginia Pulp & Paper Co., Anthony Yankowski of Kimberly-Clark Corp., and W. W. Northgraves of Olin-Mathieson Chemical Corp.

Joint Session with the Wood Products Section features (l to r): Seth Jackson of the U. S. Forest Service, Ed Sorger of the Washington State Dept. of Labor and Industries, and Tom Thompson of Tomahawk Timber Co.

Paper Manufacturing Group (l to r): K. D. Gallinger of Eastman Kodak Co., C. W. Suggs of Sonoco Products Co., H. J. Hahn of Hammermill Paper Co., H. E. Newbury of Ecusta Paper Corp., and Robert J. Goll of Eastman Kodak

the approach to the problem; perhaps not so much a difference in the professional or technical skill, but more probably a basic difference in the degree of determination on the part of top management . . . If we can develop an all-out determination in the minds of paper mill management to achieve success in safety, we should be able to change the figures in our performance record. We should be able to at least match the other leading industries of the country—and we should certainly be able to beat the steel industry."

Canada Takes the Honors

The two major safety awards that are the highlights of the annual gathering of the Pulp & Paper Section were won this year by Canadian firms for their performances in 1954.

Winner of the coveted Edward Benton Fritz Memorial Trophy was the Newcastle, N. B. mill of Fraser Companies Ltd. An average of 280 employees worked 579,000 man-hours in 1954 without a disabling injury and ranked No. 1 in Group D in the NSC pulp and paper safety contest.

The plaque was accepted for the Newcastle operation by R. B. Murchie, mill superintendent. Donor of the award is THE PAPER INDUSTRY, and A. Scott Dowd, president of Fritz Publications Inc., made the presentation.

The second annual presentation of the Arthur Hoyt Scott Trophy was made to Consolidated Paper Corp. Ltd. of Montreal. It was accepted for Consolidated by Julius A. Draper, director of safety for the firm.

Scott Paper Co. is donor of the trophy, which is given each year to that company whose operations *in all its plants combined* result in the best safety record during the contest.

As the second recipient of the award, Consolidated Paper worked a total of 8,179,780 man-hours in five company units for a frequency rate of 2.32, down 19 per cent from its 1953 rate of 2.87.

During 1954 Consolidated produced 863,339 tons of saleable production (pulp and paper) at its operating divisions in Shawinigan Falls, Grand 'Mere, Port Alfred and Three Rivers, Que. The firm makes newsprint and kraft paper, groundwood, sulfite and kraft pulp, and smaller amounts (for its own use) of wrapping paper, cardboard, cores, etc.

On page 746 is an article dealing with the safety program at the Fraser Companies Ltd. plant in Newscastle, N. B., winner of the 1954 Edward Benton Fritz Memorial Trophy.

The First Time in History

Reviewing briefly the 1954 contest year, Mr. Dowd, who is chairman of the Section's contest committee, reported an industry first. "For the first time in history," he said, "the accident record of all companies in the Pulp & Paper Section bettered the all-industry average frequency rate—7.22. Pulp & Paper's rate was 7.21. Last year was the eighth consecutive year in which members of the NSC chalked up a record-breaking performance.

"Twenty-eight of the 40 basic industry classifications reduced their frequency rates, and half of them reduced their severity rates. Pulp & Paper showed the greatest improvement for the year, with a 24 per cent decrease in accidents.

"A total of 320 contestants, or 60 per cent of the total, had frequency rates below 10, while 60 units—consisting of 29 mills and 31 remanufacturing plants—completed the contest year with perfect scores.

"The total number of man-hours worked in 1954 was 509,873,000. This exposure was 5 per cent greater than it was in 1953. The number of injuries was 3787, a decrease of 7 per cent when compared to 1953.

"There were 115 contestants, aside from the group winners, that had frequency rates of less than their group averages and also showed reductions by comparison with the rates made in the previous contest."

In Spite of Mergers

The Pulp & Paper Section's growth for the 1954-55 year was reported by the retiring chairman, Dallas E. Henry.

"We began the year with 318 key members," he declared, "and have increased to a total of 321 members." Mr. Henry added that this accomplishment was outstanding in view of the many mergers that have taken place in the industry.

Salesmen of Safety

That selling is the most important part of the safety job was the view expressed by Henry Rigby, vice president in charge of operations for Champion Paper & Fibre Co. at Hamilton, Ohio.

Addressing the second general session, Mr. Rigby stressed the attributes of a successful salesman: good balance, good self-management, friendliness, enthusiasm. And it takes a good salesman to put safety across.

"The American people, being what they are, want freedom to do as they deem advisable," he declared. "All the ordinances, rules, codes, enforcement go as naught if

Wire Direction Wet End
Wire Direction Wet End
No Deflector
Using Puseyjones "Y" Type Deflector
Puseyjones "Y" Type Deflectors in use between the table rolls on high-speed 246-inch wide fourdrinier with 14½-inch table rolls

Get Better Formation — Longer Wire Life

Puseyjones "Y" Type Deflectors go a long way toward improved formation and increased wire life — particularly at medium and high speeds. In addition, you get many other advantages when you replace your first six or more conventional deflectors with Puseyjones "Y" Type Deflectors. Here are a few of these bonus advantages:

- Slacker wires can be run . . . wire sag between rolls is eliminated
- The hump over the rolls is greatly reduced . . . the level wire table gives less disturbance during the early formation period
- Pinholes, cloudy formation and "worming" are at a minimum . . . less air and water are carried into the table roll nip

The Puseyjones "Y" Type Deflector is really a small "making" board. The leading blade supports the wire and prevents water-throwing against the trailing table roll. The trailing blade also supports the wire and helps to prevent "stock jump." The wire rides on a film of water, with virtually no wear on its underside. Blade material is Ryertex or Micarta, supported by a lightweight but rigid stainless steel frame; both vertical and horizontal adjustments are at each end.

If you have a deflector problem, let Puseyjones engineers help you solve it. Call the representative nearest you, or write us today.

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Fabricators and Welders of all classes of Steel and Alloy Products

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Folding Paper Box and Shipping Container Symposium featured a talk by Dr. Hedwig S. Kuhn, Hammond, Ind. ophthalmologist. Also on the program were B. I. Loft of Michigan State University and Forrest Kimmell of Sutherland Paper Co.

Safety in the paper converting industry came under close scrutiny at this session. Presiding was Harold Hewitt (r) of Bemis Bros. Bag Co. of Peoria, Ill. The recorder for the meeting was John T. Warren of St. Regis Paper Co. at Pensacola, Fla.

Insulation and Roofing Products meeting, where Amos S. Keen (l) of Armstrong Cork Co. was the recorder and Carl L. Eddins of Flintkote Co. the chairman. At the far right is Ernest Dutcher of Flintkote's Pioneer Div. in Los Angeles

the desire is not there. . . . Safety, if it is successful, can become a reality only if all of us acquire a burning desire to work safely, drive safely and play safely.

"Contests, posters, safety committees and the many other stunts and practices today in various safety programs are in effect as a means to an end—prevention of injuries. A real job of selling to each and every individual is the final and only solution to a real safety program.

"Selling safety is over and beyond talking to a foreman and requesting him to guard a particular spot or stop an unsafe practice. If you have sold him on safety, helped him acquire the desire to have a safe department, he will enlist your aid in helping him in the problems of safety as he sees them."

Mr. Rigby concluded by noting that if the Champion sales department, in selling paper, were content with the same amount of enthusiasm and the same techniques as are most safety departments, it would have long ago "folded its tent and as silently stolen away."

Photography in Accident Prevention

The value of photography in accident recording, analysis and prevention cannot be overestimated, according to Earl R. Wallace, safety engineer at the Kodak Park Works of Eastman Kodak Co. in Rochester, N. Y.

Appearing at the opening session, Mr. Wallace demonstrated with the aid of slides the important role pictures can play in the study of accident causes. "Photography can make it possible to remember *exactly* what happened," he said.

In accurately recording an accident, its causes and effect, a picture can be a great aid in selling management on needs in the plant. When the finished product tells a story, Mr. Wallace noted, the work of the safety director in cleaning up a bad situation (whether it be equipment failure or poor housekeeping) can be reduced 100 per cent.

Also on the first program was Gordon Lemke, research engineer for Employers Mutuals of Wausau, Wausau, Wis., who conducted a question-and-answer session, "You Asked For It."

Round-Tables and Symposia

Round-tables and symposia staged during the Pulp & Paper Section's meetings covered such subjects as Pulp Manufacturing, Paper Manufacturing, Folding Paper Box and Shipping Containers, Paper Converting, and Insulation and Roofing Products. A special joint session was held with the Wood Products Section of the NSC.

Presiding at the various meetings were: **Pulp Manufacturing**—D. V. Hill, safety director for Mead Corp. at Kingsport, Tenn.; **Wood Products** (joint session)—Seth Jackson, safety officer for the United States Forest Service at Washington, D. C.; **Paper Manufacturing**—Robert J. Gell, staff assistant in the Paper Mills Div. of Eastman Kodak Co., Rochester, N. Y.; **Folding Paper Box and Shipping Containers**—Forrest Kimmell, safety and medical director for Sutherland Paper Co. at Kalamazoo, Mich.; **Paper Converting**—Harold Hewitt, assistant personnel manager for Bemis Bros. Bag Co., and **Insulation and Roofing Products**—Carl L. Eddins, assistant insurance manager for Flintkote Co., New York, N. Y.

1955-56 Executive Committee

The structure of the 1955-56 Pulp and Paper Section executive committee, in addition to the officers listed above, is as follows:

Regional Membership Representatives

Great Lakes: Arthur Carle, safety director for Northwest Paper Co., Cloquet, Minn.; East: H. P. Heubner, insurance manager for Flintkote Co., New York, N.Y.; South: C. C. MacPike, safety director for St. Regis Paper Co., Pensacola, Fla.; Canada: Douglas B. Chant, secretary-engineer for the Ontario Pulp & Paper Makers' Safety Association, Toronto, and West; Robert M. Gilmore, general safety supervisor for Rayonier Inc. at Hoquiam, Wash.

Medical Advisor

Dr. Gordon W. Petersen, medical director for Kimberly-Clark Corp., Neenah, Wis.

Special Projects Committee

Gordon Lemke, research engineer for Employers Mutual Liability Insurance Co., Wausau, Wis. (chairman); Lambert Louy, safety director for Container Corp. of America, Chicago; George R. Merriman, coordinator of personnel and safety for International Paper Co., Mobile, Ala.; A. E. Minor, safety supervisor for Ontario-Minnesota Pulp & Paper Co. Ltd., Kenora, Ont.; D. L. Eisenach, safety officer for Minnesota & Ontario Paper Co., International Falls, Minn.; Russell E. Bell, safety director for Crossett Co., Crossett, Ark., and Dallas E. Henry, safety coordinator for Southern Advance Bag & Paper Div. of Robert Gair Co. Inc., Hodge, La.

Contest Committee

A. Scott Dowd, president of Fritz Publications Inc., Chicago (chairman); J. Fred Berry, general insurance manager for Alton Box Board Co., Alton, Ill.; Harley B. Goodrich, maintenance engineer for Strathmore Paper Co., West Springfield, Mass., and James M. Conaway, manager of safety and plant protection for Scott Paper Co., Chester, Pa.

Pulpwood Logging Division

Division Chairman: B. H. Roy, supervisor of health and safety (woodlands) for Spruce Falls Power & Paper Co. Ltd., Kapuskasing, Ont.

Publications Committee: Russell C. Hammond, safety engineer for Employers Mutual Liability Insurance Co. of Wausau, Duluth, Minn. (chairman); Harry H. Jefferson, training officer for American Pulpwood Assn., New York, N.Y.; Leo St. Dennis, woods employment supervisor for Abitibi Power & Paper Co. Ltd., Iroquois Falls, Ont., and Samuel P. Hoopes, safety director for Finch, Pruyn & Co. Inc., Glens Falls, N.Y.

Visual Aids Committee: Walter Lockhart, safety supervisor for Woodlands Dept., LongLac Pulp & Paper Co. Ltd., LongLac, Ont.; Harris K. Williams, safety director for International Paper Co., Camden Mill, Callendale, Ark.; Franklin Larrabee, ass't director of personnel and safety, (woodlands) for St. Regis Paper Co., Bucksport, Maine, and Gorden Barrett, safety director for Ontario Paper Co. Ltd., Thorold, Ont.

Pulp Manufacturing Division

Division Chairman: D. V. Hill, safety director for Mead Corp., Kingsport, Tenn.

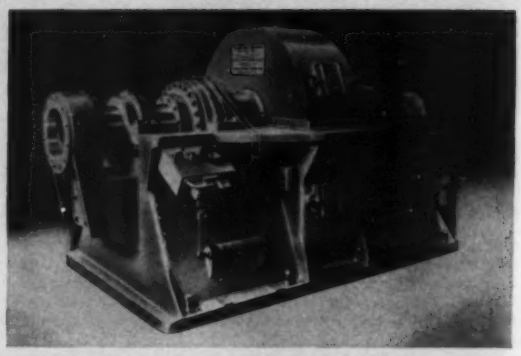
Publications Committee: Ernest Berryman,

(Continued on page 787)

SUTHERLAND PRODUCTS FOR PULP PROCESSING

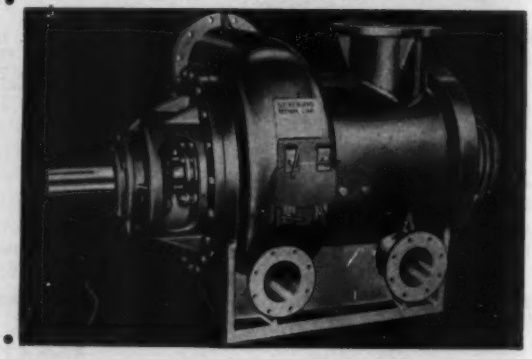
SUTHERLAND REFINER

Experience gained in the operation of more than 500 Sutherland refiners is available to help you solve your refiner problems.



SUTHERLAND BREAKER TRAP

The only machine specifically designed for the selective defibering of paper pulp.



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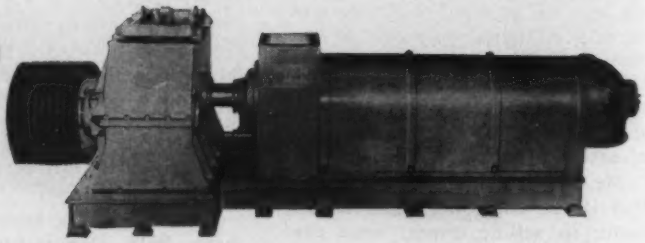
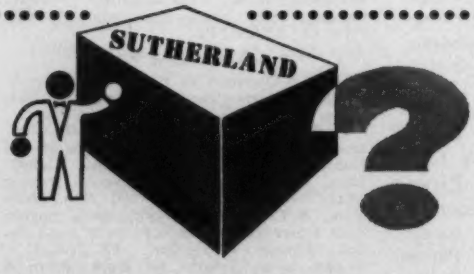
Higher operating efficiency is accomplished with specially designed presses—a real advance in the washing field.





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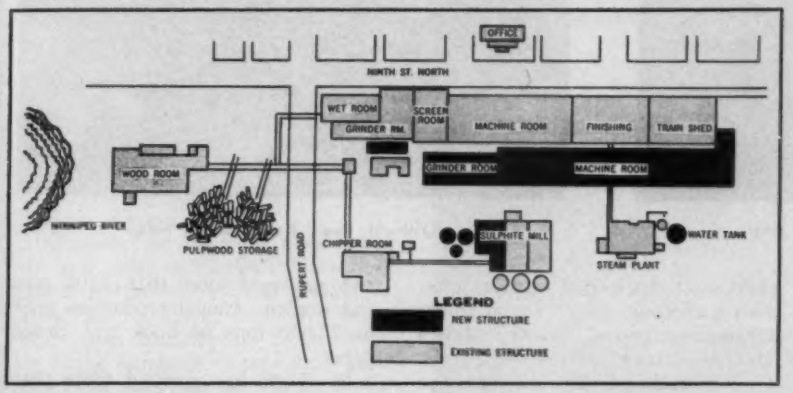
NEWS of the INDUSTRY



SKETCH SHOWING the new facilities that are to be added to the Kenora, Ont. newsprint mill of Ontario-Minnesota Pulp & Paper Co. Ltd.

Around-the-Clock Work Schedule at O&M Mill Construction Project

ADDITIONAL NEWSPRINT production facilities are scheduled to be in operation by the end of this year at Ontario-Minnesota Pulp & Paper Co. Ltd.'s mill in Kenora, Ont. Construction crews are working the equivalent of a double nine-hour shift six days a week. (O-M is a subsidiary of Minnesota & Ontario Paper Co.)

Increasing heavy demand for newsprint has caused Mando to accelerate its installation schedule so that the $17,000,000 project can be finished in record time.

According to J. F. MacKellar, vice president and general manager, the mill's daily production capacity will climb from 400 tons to more than 700 tons with the addition of the third paper machine. Mando's three-mill production of newsprint and specialty papers will increase approximately 30 per cent to about 400,000 tons annually.

In addition to the newsprint machine, new facilities will include expansion of the wood room, a new grinder room, modernization of the screen room, new chemical pulp facilities, a new steam boiler, enlargement of the mill water supply, expansion of the electrical power system and improvements to the finishing and shipping room.

An addition to the paper machine room is being built to house a new Beloit Iron Works high-speed newsprint unit capable of producing up to 100,000 annual tons. The machine is being designed to ultimately operate at speeds of up to 2500 fpm. The width of the wire is 276 in.

Detailing the expansion project, Mr. MacKellar said that the wood room will be altered to accommodate a new Weldrum barking drum. Also to be installed is additional wood-handling machinery.

As the new paper machine will require an annual 120,000 cords, the wood room will operate full time throughout the winter months.

Eight Waterous super-hydraulic grinders, driven by four 5500-hp electric motors, will be housed in the projected grinder room. These grinding facilities will supplement the present 13 units. The mill's groundwood production will thus be increased by about 86,000 tons annually.

A new digester is to be added to the sulfite mill, thereby increasing capacity by some 15,000 tons of pulp. The screen room is to be modernized with the installation of Cowan screens, deckers and other facilities.

In the boiler house, a 150,000-lb/hr steam boiler manufactured by Foster Wheeler Corp. will operate at 250 psi.

Additional electric power will be furnished by Ontario's Hydro-Electric Power Commission, which will install a new line from Dryden to Kenora. The Beloit machine's power requirements will boost the mill's needs 17,000 kw, thereby increasing the load for the plant, town and surrounding rural areas from 30,000 to 47,000 kw. A substation is to be built at the mill and will be equipped with a 30,000-kva transformer. A 20,000-kva unit is already in operation.

In due course, the new machine at Kenora will relieve a smaller unit at Fort Frances for the exclusive manufacture of groundwood specialty papers. Much of the new capacity at Fort Frances will be devoted to higher grades now being manufactured at the Mando mill in International Falls, Minn. The United States mill will therefore be allowed to intensify its concentration on the manufacture of fully-bleached papers.

In charge of construction at Kenora is Paul A. Laurence Co. of Minneapolis. H. A. Simons Ltd. of Vancouver, B. C., is the engineering consultant responsible for plant design and supervision of construction.

K-C Forms Mexican Subsidiary, Purchases Two Operating Mills

Kimberly-Clark Corp. of Neenah, Wis., has announced the formation of Kimberly-Clark de Mexico, S. A. de C. V. The newly established firm has purchased the two mills of Fabrica de Papel La Aurora.

One of the two manufacturing mills is located in Mexico City, while the other is at nearby San Bartolo Naucalpan. Their operation will continue under the active management of K-C's Mexican subsidiary, in which the majority of stock is held by the Wisconsin firm. Mexican interests own the remainder.

Kimberly-Clark products have been sold in Mexico for 20 years. Its decision to move into manufacturing and converting creped wadding in conjunction with Mexican interests is prompted by the growing demand in that country for K-C products.

Operation of the two mills will

THEN—Bryant Paper Co. mills in 1898

NOW—St. Regis' Kalamazo mill today

St. Regis Mill Marks Sixtieth Anniversary

The Kalamazoo, Mich. mill of St. Regis Paper Co. recently observed the 60th anniversary of its incorporation. The plant is one of the firm's major producers of printing and publication papers.

Founded in 1895 as Bryant Paper Co., the Kalamazoo mill was acquired by St. Regis late in 1946 from Time Inc. Time had purchased the mill in 1945.

Bryant Paper was organized by a group of local Kalamazoo citizens, including Noah Bryant, who served as president until 1908; H. H. Everard; Frank H. Milham, and Charles B. Hayes. The second mill to be established in the Kalamazoo Valley area, the Bryant plant in its early days produced plate and lithographic papers, white and tinted papers, matrix, interleaving, blotting, map, coupon folder and railroad papers, woven and laid subscription book and printing papers. When in full operation, the plant had a weekly production of 75 tons.

(The mill currently turns out enamel coated and uncoated commercial and label papers and specialty papers from reclaimed paper and bleached kraft pulp, the latter being produced at the St. Regis plant in Tacoma, Wash.)

Eleven Machines by 1920s

In 1905, the Bryant firm acquired the Imperial Coating mill adjacent to its own plant, thus entering the field of coated papers. Superior Paper Co. was purchased in 1906, and four years later the Milham Div. was constructed. By the mid-1920s Bryant owned 11 paper machines, 24 coating machines and employed more than 1200 men and women. Annual production grew to 75,000 tons of book and coated paper.

St. Regis has invested more than $4,500,000 in modernization at Kalamazoo, so that today production from its five paper machines and its coating mill equals that of the 11 paper machines in operation three decades ago, when Bryant ranked as one of the world's largest book paper mills.

Three paper machines have been reconditioned and one rebuilt since St. Regis took over in 1946, while additional improvements have also been made in the stock preparation and storage system. The coating department has undergone several changes, including the installation of such high-speed coating equipment as a Faeber coater, a double coated and a Microjet coater.

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continue without immediate change of plans for the types of products manufactured, except for the San Bartolo mill, where facilities will be increased for the production of creped wadding and its conversion into sanitary products such as facial and toilet tissues and sanitary napkins.

Philip A. Bachelder, a former K-C employee and now secretary and assistant treasurer of an associated firm, Coosa River Newsprint Co., will be general manager of Kimberly-Clark de Mexico.

Bowater's Newfoundland Gives Expansion Details

The speed-up of a large newsprint machine will be the key project in the $5,000,000 expansion program currently in the works at the Corner Brook, Nfind. mill of Bowater's Newfoundland Pulp & Paper Mills Ltd.

Details of the program were recently announced by the firm. The machine speed-up alone will cost some $2,000,000.

The wet end of the 284-in. unit is to be virtually rebuilt, with a new press section and pressure headbox. The drive is to be replaced.

The immediate objective is a speed of 2000 fpm and a 25 per cent increase in output. However, the work is aimed at an eventual machine speed of 2500 fpm. A new Beloit winder is already on order.

A tenth digester and a further line of grinders will be provided.

The chip system, which is obsolescent and overloaded, is to be modernized, as is the older section of the groundwood screening system. Screens on the older paper machines will be replaced, and automatic finishing and wrapping equipment will be installed.

According to a Bowater's spokesman, current experiments toward high-yield sulfite pulping are to be pressed "vigorously."

A further study has been undertaken into the possibility of speeding up the older newsprint machines now running at 1300 fpm. It is proposed initially to rebuild one of them so as to make speeds of 1600 to 1650 fpm possible.

$6,000,000 in Three Years

Over the past three years a $6,000,000 improvement program has been carried out. Of the major items, all but one will be completed by the end of 1955: a seventh barking drum, new sulfur burning plant, a ninth digester, complete new sulfite screening system, sulfite waste refining system, new line of Waterous super grinders, improvements to groundwood and broke systems, new 140,000-

lbs. per hr. high-pressure boiler, and one 6600-kva steam turbo-generator (due in 1956).

In addition to this main program, a new heavy-duty Kamyr press is to be installed on the pulp machine, from which an increased output of 20 daily tons is anticipated.

Paper, Pulp Industry Ranks 5th In Nation

The value of products of the nation's pulp and paper industry is exceeded only by that of motor vehicles, steel, meat packing and petroleum. The statement was made in a book, "Paper and Progress," recently published by the Mead Corp. in Dayton, Ohio.

Consumption for every man, woman and child in the United States is about 400 lb. per year and is expected to go to 500 lb. by 1975. Declaring that paper consumption is an index to living standards around the world, the book cites the pound per capita figures for the following countries: Canada, 250; Norway, 138; Great Britain, 130; Russia, 14, and India, 1.25.

Scott Studies Mexican Possibilities

Scott Paper Co. of Chester, Pa., was recently engaged in working out arrangements with Compania Industrial de San Cristobal, S. A., of Mexico City whereby Scott would obtain an interest in the firm for the manufacture and sale of sanitary paper products in Mexico. The project was announced by Thomas B. McCabe, president of Scott, and Dr. Dante Sandro Cusi, president of Compania Industrial de San Cristobal.

The Mexican company now manufactures pulp from sugar cane bagasse, a field in which Dr. Cusi has pioneered. Some of the pulp is used by the firm in the manufacture of various grades of paper, while the remainder is being marketed.

Directors Approve Ft. Orange-Sutherland Merger Proposal

A proposal to merge Fort Orange Paper Co. of Castleton-on-Hudson N. Y., into Sutherland Paper Co. of Kalamazoo, Mich., has been approved by the directors of both firms. It is subject to stockholder approval.

Under the plan Fort Orange would become the eastern subsidiary of Sutherland, which intends to operate the plant with its present management and personnel. Fort Orange produces paperboard and folding cartons for sale in the East.

Crane & Co. Completes Modernization

Crane & Co. Inc. has completed three major installations at its mills in Dalton, Mass. Largest single project was the erection of a Rice Barton Corp. paper machine at the Bay State mill.

The summer's work also included installation of a Bertram's beater in the Berkshire mill and two such units in the Government mill. The beaters, already in operation, are products of E. D. Jones & Sons Co.

The over-all modernization cost was $585,000, bringing Crane's post-war spending to $5,000,000.

The work at the Bay State mill consisted actually of installing only part of the machine. The new section comprises the fourdrinier and wire process sections. Installation of the complete machine will require a mill addition to be constructed. When fully installed, the unit will produce stationery papers in a 150-in. sheet, as contrasted to the old machine's 80 in.

REPRESENTATIVES of the southern pulpwood industry meet at Battelle Memorial Institute. They are (clockwise): B. E. Allen, Union Bag & Paper Corp.; J. C. Redd, the Mead Corp.; Earl Porter, International Paper Co.; R. R. Edgar, Bowaters Southern Paper Corp.; N. R. Harding, Rome Kraft Co.; G. L. Snowden, Georgia Kraft Co.; K. G. Chesley, Crossett Co.; O. H. Alderks, Buckeye Cellulose Corp.; T. A. Walbridge Jr. and H. C. Carruth, Bowaters Southern, R. B. Filbert, Battelle Institute, and W. P. Lawrence, R. W. Scholl and A. C. Shaw, all of Champion Paper & Fibre Co.

Debarking Discussed by Southern Pulpwood Firms at Battelle Meeting

Debarking problems faced by the southern pulpwood industry were discussed recently at a meeting sponsored by the Battelle Memorial Institute in Columbus, Ohio. Representatives of 20 pulpwood firms were present at the gathering, which was organized and directed by W. C. Finley, Battelle liaison representative to the forest and wood products industry.

It was pointed out during the discussions that the net domestic requirements for pulpwood in the United States will increase from the present consumption of 28,500,000 cords to 47,500,000 cords by 1975. Predictions have also been made that pulpwood requirements in the South will double during the same period and will be approximately 30,000,000 cords by 1975.

To offset the anticipated pulpwood requirements in the future, pulpwood industry men are looking to mill residues as a potential source of as much as one-third of current fiber needs. At the present time, one of the numerous obstacles to the use of such residues is a quick and economic removal of bark. Another problem is the separation of bark from chips. It was also noted during the Battelle

ARTIST'S CONCEPTION of shipping container plant that Robert Gair Co. Inc. will build in Cleveland to house its Ohio Corrugated Box Div. The 92,500-sq. ft. structure, which will be located on a 24-acre site, is scheduled for occupancy in November of next year. The equipment for shipping container fabrication and processing will be the most modern available and will include a high-speed Langston corrugating machine

meeting that a 16-per cent increase in pulpwood cordage would be needed during the next 20 years if demands for paper increase as estimated.

Mr. Finley, who is a forester by training, told the group that increased fiber production could be obtained through more intensive forest management. "We need to find new uses and markets for the presently considered 'inferior hardwood species,'" he said, "and if possible utilize more of them in the pulping process."

MacMillan & Bloedel Awards Port Alberni Construction Contract

B. M. Hoffmeister, president of MacMillan & Bloedel Ltd., has announced that M&B has signed a contract with Dominion Construction Co. Ltd. for carrying out the $40,000,000 expansion program at the Port Alberni, B. C. pulp mill. The project is the largest single pulp mill building program ever to be carried out in British Columbia.

The expansion will double the present capacity of 250 tons per day of sulfate pulp and will add a 180-ton general purpose and board machine and a 300-ton newsprint mill. Provision is being made for a second unit. Plans now call for the plant to be in full operation by early 1957.

Project engineering firm for the construction is H. A. Simons Ltd. of Vancouver. Simons designed and engineered the present Port Alberni mill, as well as the Harmac plant.

Raincoats or Popcorn?

Riegel Paper Corp. has reported that it faces an unusual problem due to the development of an "amazing new paper that is extremely resistant to passage of oil, water and other liquids but will permit air to pass through freely."

In an effort to discover a use for the new paper, Riegel released the following announcement: ". . . Having developed it, the question is, 'What to do with it?' Some folks say it's just right for paper raincoats that will shed water but keep the wearer cool on hot days . . . Others think it's perfect for popcorn bags that won't leak grease and can't be blown up and popped in theaters. There must be many other uses for this amazing new paper, but Riegel wants to know, 'Who can use it, who needs a paper with these extraordinary properties?'"

The firm is willing to talk to anyone with ideas on the subject.

Fourth Pulping Conference Announced by U. of Florida

The University of Florida at Gainesville has announced that its Fourth Annual Pulping Conference will be held December 5-6 at the auditorium of the Florida Union.

FIRST OF SIX 6000-hp synchronous motors being built for Bowaters Southern Paper Corp. at Calhoun, Tenn., by Electric Machinery Mfg. Co. of Minneapolis. The motors, which will be the largest ever applied to single pulp grinders, are 240-rpm, 4000-v units enclosed with air-to-water coolers located at the bottom. The sleeve type bearings are 14 in. in diameter and 20 in. wide and are lubricated by double oil rings. Over-all weight of each unit is 45 tons

The first day of the gathering will be given over to the presentation of a series of papers devoted to standard batch methods for producing bleachable grades and high-yield kraft and also to continuous methods for producing such pulps.

The entire morning of the second day will be given over to a round-table discussion.

The university's pulp and paper laboratory will be in operation and open for inspection on the afternoon of December 6.

Union B&P May Build Mill

Union Bag & Paper Corp., which has its paper and paperboard production centered at the huge Savannah, Ga. plant, is considering the construction of a mill in some other part of the country.

D. J. Hardenbrook, vice president, declared recently that, "just what type of mill that may be or its location depends on the results of the studies being undertaken at the present time."

Addressing the New York Society of Security Analysts, Mr. Hardenbrook said that the pace of Union Bag's sales indicated a volume of $120,000,000 this year; the company's 1954 sales totaled $105,000,000.

Rayonier to Build 100,000-ton Cellulose Mill at Jesup, Ga.

Rayonier Inc. will soon begin construction at Jesup, Ga., of an advanced design chemical cellulose plant. According to Clyde B. Morgan, president, the mill will have an annual capacity of 100,000 tons.

At a cost of approximately $25,000,000, the newest unit in the Rayonier cellulose network will be placed in operation late in 1957. It represents a part of the firm's $80,000,000 capital expansion program over the next three years.

Mr. Morgan declared that since the announcement of the new mill at a director's meeting in Paris last May, the company considered many suitable locations for the new unit. Among others were the southeastern United States, the Pacific Northwest and British Columbia, where Rayonier already has extensive manufacturing operations.

The Jesup site was chosen primarily because of the assured availability of water and timber. Other factors, such as the availability of a skilled labor force, adequate transportation facilities, consolidated land management

and timber procurement operations, etc. contributed to the selection.

An Annual 900,000 Tons

The newest mill will bring Rayonier's annual production capacity to some 900,000 tons. It will incorporate several advanced features of the present Jesup mill, as well as newer features recently developed by the firm's research and engineering staff.

The proposed plant — a completely self-contained manufacturing unit—is in no ways an expansion of the present Jesup facility. It will provide complete flexibility with the existing mill to produce simultaneously two different types of cellulose. From outward appearances the new mill will be a mirror image of the present Jesup plant.

Rayflo Plant Under Construction

A seismograph charge recently broke ground at Vancouver, B. C., for the construction of a $1,000,000 silvichemical plant that will for the first time produce Rayflo on a commercial scale. Rayflo is a newly developed oil well drilling mud dispersant.

The plant is being constructed by Alaska Pine & Cellulose Ltd., Rayonier's Canadian subsidiary.

Rayflo is a silvichemical, a term coined by Rayonier three years ago to describe complex organic tree chemicals other than cellulose. Residues from a nearby Alaska Pine & Cellulose operation will supply the essential raw materials for the new Rayflo plant. The Rayflo operation will be located at Alaska P&P's Marpole Div.

According to George E. Durkee, Rayonier technical service representative to the oil well drilling industry, Rayflo is successfully proving itself in the United States and South America as a complete domestic replacement for imported products such as quebracho. Chemically produced from the residual matter of lumber and pulping operations, the silvichemical has been found less costly to use than its imported rivals, as it is completely water soluble and requires less caustic soda to attain a given level of performance.

National Paper of Pa. to Produce Fibreboard

National Paper Corp. of Pennsylvania at Ransom, Pa., will spend an estimated $15,000,000 for a fibreboard plant at Carbondale. It is planned to convert an unused Delaware & Hudson Railroad roundhouse for use as a manufacturing unit.

Harry Pearlman, president of the firm, announced that National Paper Corp. and two cardboard box manu-

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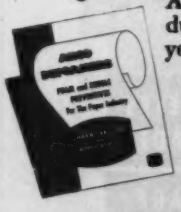

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facturers are planning to form a new corporation to operate the Carbondale plant. Names of the other two companies were not disclosed.

Mr. Pearlman also announced that a plan is being worked out to produce newsprint — possibly at the Carbondale plant. If experiments prove successful, he said, regional hardwood forests will be used in the process. If such plans are carried through to completion, he continued, it would require about 22 months for machinery to be built and installed at Carbondale.

American Linen Acquires Interest in Badger Tissue

Six stockholders of Badger Tissue Mills of Kaukauna, Wis., have sold their entire stockholdings to American Linen Supply Co. of Chicago. The announcement was made by Lewis F. Nelson, president of Badger.

Business at the Kaukauna plant, he said, will increase when an American Linen converting plant at Utica, N. Y., is moved to Wisconsin.

PROPOSED CORRUGATED box factory that Hinde & Dauch Paper Co. will build at Eaton, Ohio, 24 miles west of Dayton. Construction on the $2,500,000 facility is scheduled to begin this fall. Production is expected next summer in the 150,000-sq. ft. plant. H & D has two plants currently under construction at Gastonia, N. C., and Kansas City, Kans.

Quick-Pulping Process Developed for Bagasse

W. R. Grace & Co. has announced that the newly formed Process Evaluation & Development Corp. (PEADCO) has developed a new continuous quick-pulping process for the conversion of bagasse into a high-grade commercial paper product.

(Peadco is owned equally by Clarence Birdseye, John W. Bolton & Sons Inc. and W. R. Grace & Co.)

According to W. R. Grace, one of the outstanding features of the new process is the quick-pulping rate that reduces the present pulping methods from several hours to 5 or 10 minutes by transforming bagasse directly into pulp as it leaves the sugar mill. (Bagasse is the fibrous residue of sugar cane.)

Other features include low first and operating costs, and versatility and simplicity of operation at rapid digestion rates to produce high-strength pulps for both paper and board production.

Work on the Peadco Process was initiated at Lawrence, Mass., by Clarence Birdseye, widely known originator of quick-freezing and other food processing methods, and Harold D. Stuck, vice president of John W. Bolton & Sons. Testing ground for the process was W. R. Grace's 14,000-acre sugar plantation in Paramonga, Peru. A pilot plant was built in Paramonga in 1953, where Grace has operated the world's first successful bagasse pulp and paper mill for the past 15 years.

Such highly successful pulp products have been produced that Grace is planning for 1956 a complete changeover to the Peadco Process in its Peruvian plant, which will have a daily capacity of 150 tons.

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1954 National Forest Fire Damage Set at $3,700,000

Fire damage on national forests during 1954 has been estimated at $3,700,000 by the United States Department of Agriculture.

According to reports from U. S. Forest Service field offices, 7369 forest fires — 3425 of them man-caused — burned 107,656 acres of national forest land last year. The timber damage was $1,062,489.

The destruction of ground cover such as grass, trees and shrubs resulted in damages of $2,227,455 to watersheds that supply a large part of the water used in the West for industry, irrigation farming and homes. These damages appear in the erosion of topsoil, excessive silt in streams and reservoirs, flash floods

and in a few instances mudflows. Damage to other non-timber resources such as wildlife, recreation and forage was $447,033.

The 1954 report shows an across-the-board improvement over the 1953 national forest fire record. During that year, 8353 fires burned 231,-314 acres of national forest land, leaving in their wake an estimated damage of $14,489,594.

Wisconsin Firms Contract for Once Worthless Scrub

The scrub oak of central Wisconsin is at last finding a market. Its fiber is being blended with that of the more desirable timber such as spruce and pine.

The process was developed at the U. S. Forest Products Laboratory at Madison and was promptly adopted for improvement by Nekoosa-Edwards Paper Co. at Port Edwards. About 1000 acres of the stunted oak in a central Wisconsin county is being chemically treated to speed debarking.

Several Wisconsin and Michigan paper mills are experimenting with this chemical debarker on their industrial forests. The tree marked for pulp is girdled and a chemical smeared into the cut. The solution kills the growth of the tree and also in a few weeks loosens the bark. (A repellent is added to the debarking chemical to deter animals — especially deer — from the solution, which is toxic.)

Paper mills using the scrub oak are making a limited number of contracts with landowners for 25 to 50 cords of the oak. Nepco has announced that 1955 quotas have been filled.

In the 3,000,000- to 4,000,000-acre central Wisconsin sandy loam area there is a heavy growth of this oak, which has replaced the pine and valued hardwoods. Because of the sandy soil and other factors, the tree never reaches saw timber size.

Forest Service Spraying Threatened Timberlands

The U. S. Forest Service has sprayed 2,250,000 acres of spruce-fir forests with DDT to spare them from budworm damage. It is the largest aerial spraying project ever undertaken by the U.S.F.S.

Threatened forests are located in Oregon, Idaho, Montana and New Mexico. Some 12.3 billion board feet of timber, valued at $38,000,000 as it stands in the woods, is immedi-

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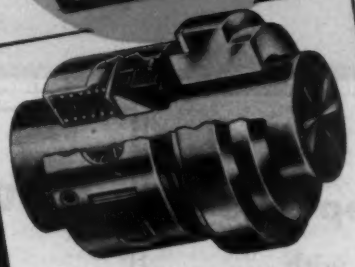

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ately threatened. Its local lumber value is estimated at $75,000,000. On the other hand, the cost of the spraying averages little more than $1 per acre. Because some of the threatened timber is in state and private ownership, the states are cooperating in the financing and conduct of the control work.

The spraying has to be completed during a few days (usually in July) when the budworms are exposed while feeding on the foliage. One pound of DDT mixed with 1 gal. of fuel oil is sprayed per acre. This light dosage will obtain a thorough kill of budworms but is not destructive to fish, birds, wild or domestic animals.

Container Corp. May Build in Virginia

Container Corp. of America has taken options on between 400 and 500 acres of land near South Boston, Va. It is reported that the firm is considering the construction of a $30,000,000 paper mill in the area.

Local officials said that the company's decision may hinge upon the price asked for the tract. The proposed plant, which will employ 400 to 500 persons, would produce paper for use by Container Corp.

St. Lawrence to Increase Capacity

St. Lawrence Corp. Ltd. has announced a speed-up and modernization program for mills at Trois Rivieres and Dolbeau, Que. Newsprint capacity will be increased by about 40,000 tons annually, bringing newsprint production to a yearly 435,000 tons.

This is in addition to the kraft production of the firm, which has been substantially increased in recent years at East Angus, Que., and Red Rock, Ont.

CZ By-Product to be Used as Plant Food

A new chemical by-product of pulp and paper manufacture will be marketed next year by Crown Zellerbach Corp. To be given the trade name Greenz 26, its use will be as an agricultural mineral to correct iron deficiency in plants.

The inventor, Dr. J. P. Bennett, formerly with the University of California at Berkley, is a recognized authority on iron chlorosis. Indications to date are that Greenz 26 will be much safer to use than existing products now being marketed. No cases of direct injury to leaves have been noted. The product will be available for limited commercial use during the 1956 growing season and will be handled by Crown Zellerbach's Chemical Products Div. located at Camas, Wash.

Water Needs of Industry Increasing Sharply

The pulp and paper industry of the United States uses 10 times as much water each day as the entire city of Philadelphia. This was announced recently by Secretary of the Interior Douglas McKay.

During 1950, he said, the industry used about 3,200 million gal. of water per day. This was increased by 1954 to 3,800 million. Nevertheless, pulp and paper manufacturers rank fourth among large industrial water users.

The U. S. Geological Survey revealed that about 40,000 gal. of water are needed to produce a ton of pulp, 33,000 gal. to convert pulp to a ton of paper and about 13,000 gal. to convert to a ton of paperboard.

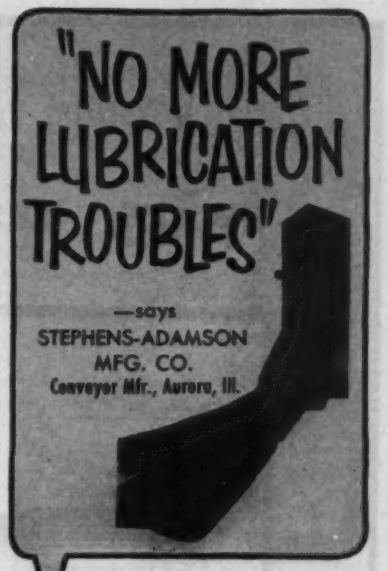
PI Expansion Notes . . .

Crown Zellerbach Canada Ltd. has awarded the contract for its new $4,000,000 paper converting and box manufacturing plant at Vancouver, B. C. The 63,000-sq. ft. operation on a 152-acre site on Lulu Island will be built by Commonwealth Construction Co. of Vancouver. Capital investment, including machinery, is expected to run as high as $15,000,000.

Crown Zellerbach Canada Ltd. has purchased Bartram Paper Products Co. Ltd. of Vancouver, B. C., a paper converting firm.

Puget Sound Pulp & Timber Co. of Bellingham, Wash., has purchased Anglo-Canadian Timber Products Ltd. of Vancouver, B. C. Anglo-Canadian holds large timber tracts in the Brandywine district some 50 miles north of Vancouver. The sale price was $2,500,000.

Continental Can Co. is constructing a one-story plant in Midland, Mich., for the manufacture of fiber shipping drums. The 140,000-sq. ft. building is to be completed by the end of the year.



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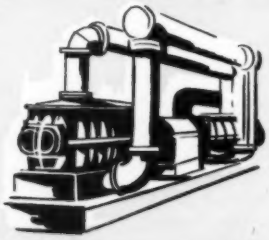

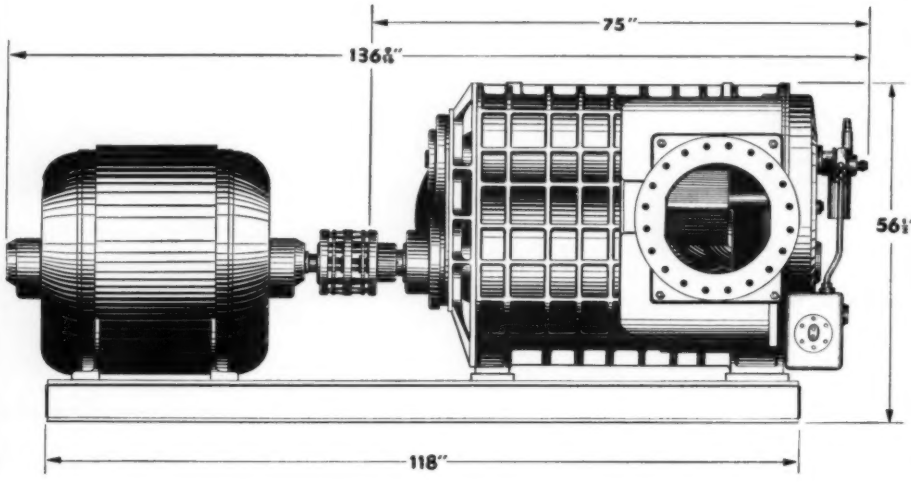

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Standardaire 175x32 Vacuum Pump
75 inches in length, weighs approximately 8,000 lbs.

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What's the secret behind the *Standardaire* capacities? Simple, rugged construction and *Standardaire's* exclusive, cycloidal screw-type rotors which compress air in a wide range of pressures with a minimum of internal leakage.

The *Standardaire* is essentially a dry-type vacuum pump, using a very small quantity of water for temperature control.

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ALLIED NEWS

Lodding Buys Bailey & Blendinger

Lodding Engineering Corp. of Worcester, Mass., has acquired Bailey & Blendinger Co. of Union, N. H. Bailey & Blendinger is a long-established manufacturer of machine knives. The B & B Div. of Lodding will produce chipper and hog knives for pulp mills and paper knives for paper mills.

Sales will be handled in New England by C. S. Connington of Barre, Mass.; on the West Coast by R. T. Barnes Jr. of Burlingame, Cal., and in the rest of the United States by W. E. Greene Corp. of New York, N. Y.

Beloit Obtains Downingtown Facilities; Forms New Firm

Harry C. Moore, president of Beloit Iron Works at Beloit, Wis., announces the acquisition of the foundry and machine shop facilities previously owned by Downingtown Mfg. Co. of Downingtown, Pa. The purchase includes plant and equipment only.

It was also announced that a new firm is being established, Beloit Eastern Corp., having as its officers: William S. Wood, president; E. H. Neese Jr., executive vice president and treasurer; Alonzo A. Neese, secretary; Harold E. Tower, assistant secretary and treasurer, and Horace Rodgers, general manager. It is Beloit's intention to have this plant augment present manufacturing facilities at Beloit, where engineering and sales will be continued.

Huyck May Build in South

F. C. Huyck & Sons of Rensselaer, N. Y., has announced the taking of an option on a 200-acre site at Aliceville, Ala., where it expects to build a one-story mill containing about 200,000 sq. ft.

G. R. Holden, president of Huyck, declares that increased production capacity is needed to keep pace with the growing demand for felts and other industrial fabrics, to provide needed space for new products currently in development, and to furnish better service of all types to customers in the southern states.

Aliceville is located in the heart of the South's paper industry. It is about 40 miles from Tuscaloosa and less than 20 miles east of the Mississippi border.

Directors of Stauffer and Consolidated Approve Merger

Stauffer Chemical Co. and Consolidated Chemical Industries Inc. have announced that agreement in principle has been reached on a plan of merger of Consolidated into Stauffer. The plan was approved unanimously by the boards of directors of the two firms and will be submitted to stockholders. An exchange of stock is involved.

Total assets of the combined companies will be $120,000,000. Consolidated Chemical operations will be carried on under the name, Consolidated Chemical Industries Div. of Stauffer Chemical Co. No significant personnel changes are contemplated.

Valley Iron Announces Major Expansion

Valley Iron Works Co. of Appleton, Wis., will construct a large addition to its present facilities. (The firm produces Valley stock entrance equipment, consisting of headboxes, inlets, and auxiliary equipment; also, Sutherland refiners and breaker traps and fourdrinier type wet ends.)

While the major part of the addition will be a 240- by 80-ft. building of brick, steel and glass brick construction with a ceiling height of 50 ft., several auxiliary buildings will also be built.

The main structure will have a 20-ton capacity crane throughout its length. Of this building, 120 ft. will be additional machine shop space with a number of new machine tools installed. The remaining 120 ft. will house a new weld shop. The building program also includes new construction housing annealing oven and sandblasting facilities, a new carpenter shop, washroom facilities, an office for shop supervisors and production control personnel.

Allied News Briefs . . .

Whiting Corp. of Harvey, Ill., has filed suit in Kansas against Hemco Mfg. Co. of Argonia charging infringement of two U. S. patents (Nos. 2718195 and 2718197) assigned to Whiting and relating to that firm's Trackmobile. The unit is a light-weight railroad car-moving device, and the two patents cover the weight transfer coupler and the right-angle wheel arrangement of road and track wheels.

Ladish Co. of Cudahy, Wis., has announced the purchase of two adjacent Los Angeles manufacturing plants: CBS Steel & Forge Co. and General Pacific Corp. The Wisconsin producer of controlled quality drop forgings, pipe fittings and rolled rings will operate the plants as the Ladish Pacific Div.

Johns-Manville Corp. will split its present Industrial Products Div. into three new operating divisions: the Pipe Div., Packings and Friction Materials Div. and Industrial Insulations Div. The move continues the decentralization of operations started in 1946 and backed by a continuing plant and mine expansion program.

Dravo Corp. of Pittsburgh has announced an expansion of industrial engineering services through acquisition of the mill lubrication department of De Laval Separator Co. of Poughkeepsie, N. Y. The new lubrication section will offer complete design engineering and installation services to industries requiring specialized lubrication systems.

The boards of directors of Hooker Electrochemical Co. and Niagara Alkali Co., both of Niagara Falls, N. Y., have approved a formal agreement for the consolidation of the two firms. The action is subject to stockholder approval.

Preliminary plans for moving the Houston research laboratory to its new home near the Manchester plant have been announced by Consolidated Chemical Industries Inc.

General Aniline & Film Corp., whose Antara Chemicals Div. is a major supplier of detergents and other surfactants, has announced an expansion program in the liquid detergent field.

D. M. Pierce

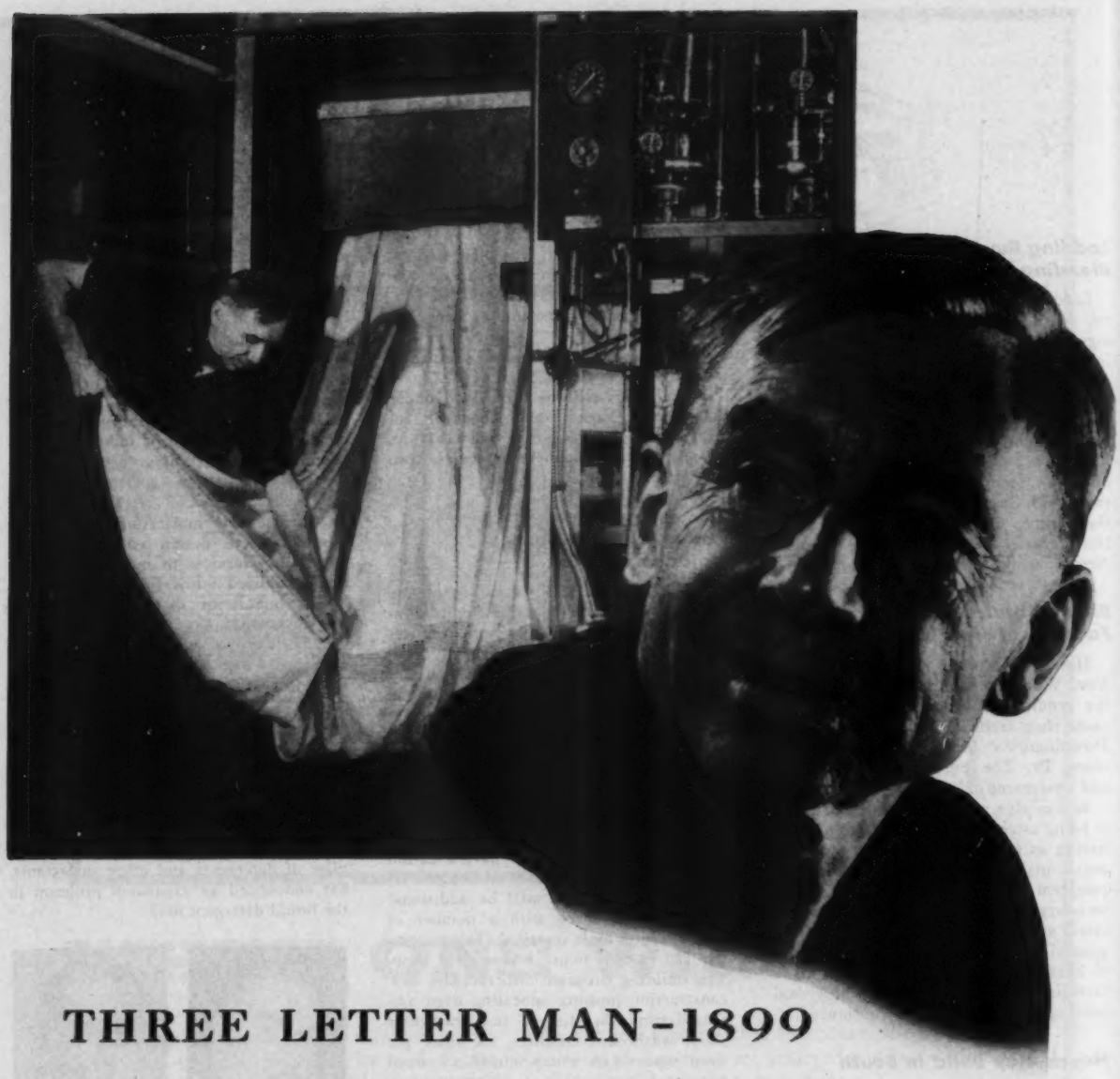
S. G. Briscoe

P & J Elects Pierce

The board of directors of Pusey & Jones Corp. has elected Daniel M. Pierce president and general manager. Prior to joining the firm early in 1954 as works manager, he had been associated with the Brooklyn Div. of Todd Shipyards as assistant general manager. As president of Pusey & Jones, he succeeds the late Col. O. Y. Warren.

The board also elected S. M. Bratton a vice president. He has been with the firm 38 years and is now chief engineer of the paper machine division.

Sidney G. Briscoe was appointed general sales manager of the paper machine division. He joined P&J 20 years ago following graduation from the University of Maine.



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This is keen, wiry Frank Hammer. A real athlete as a boy, he starred in baseball and played rugged football and basketball, too. And, for 53 years, Frank has been putting his vitality and team spirit to good use in the production of sturdy felts. Today he's a fulling expert—checking Appleton felts through the fulling mill that shrinks them down for finish, strength, and a good, firm fit.

Frank Hammer is typical of the steady, long-experienced workers at the Appleton Woolen Mills . . . a 73-year-old organization dedicated to development, progress, and the production of ever finer felts—for the finest paper-making.

APPLETON WOOLEN MILLS

APPLETON, WISCONSIN

Landegger Gets B-C Post

Karl F. Landegger, president of Parsons & Whittemore/Lyddon Organization of New York and London, has been elected chairman of the board of the Black-Clawson Co. of Middletown, Ohio.

Mr. Landegger succeeds Homer D. Martindale, who has been associated with B-C for 40 years. Mr. Martindale will remain on the board of directors.

K. F. Landegger

Claire Turner

Appleton Woolen Names Turner

Claire Turner has been appointed sales manager of Appleton Woolen Mills in Appleton, Wis., replacing Karl Oberreich, who recently resigned.

Mr. Turner, a 25-year veteran in the paper industry, has been with the Appleton firm since 1950 as New England representative and—since last April—as north central states representative. Prior to joining Appleton Woolen, he had been manager and superintendent of Pollock Paper Corp. in Columbus, Ohio. He is a member of Tappi and APPA.

Allied Personalities . . .

Louis J. Baudis has been elected vice president in charge of engineering and manufacturing for Samuel M. Langston Co. of Camden, N. J. He was formerly vice president in charge of manufacturing and a member of the board of Bullard Co. of Bridgeport, Conn. Assisting Mr. Baudis will be **Charles D. Nitchie**, former chief engineer.

L. J. Baudis

P. M. Bigley

Paul M. Bigley, a 37- year veteran with the firm, has been named product manager for alkalies, chlorine and carbon dioxide for the M. A. Div. of Wyandotte Chemicals Corp. He is to be assisted by **John Hodge** and **Paul Niefert**.

Two promotions were recently reported by the American Car & Foundry Div. of ACF Industries Inc. **John E. Angst**, district sales manager, has been named vice president for sales with headquarters in Chicago. **Ellsworth B. Carpenter**, formerly western sales manager, has been appointed vice president for sales with headquarters in St. Louis.

Thomas H. Trimble has been appointed manager of public relations for Hooker Electrochemical Co. He joined the Hooker staff in 1935.

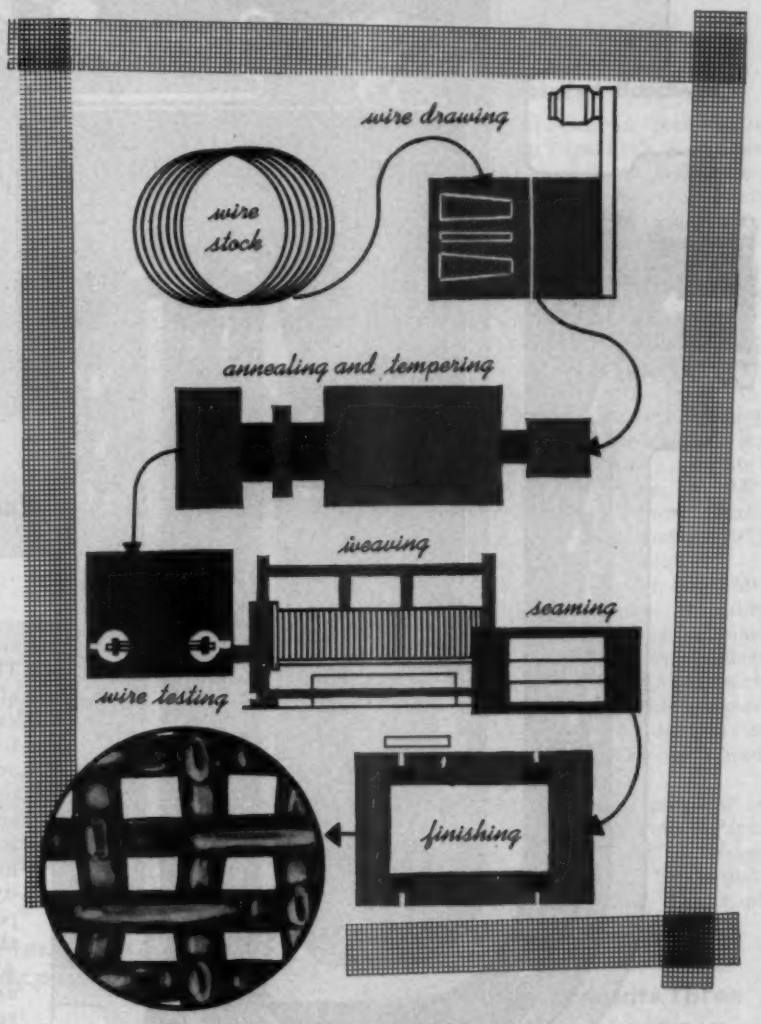
Oldbury Electro-Chemical Co. has announced the following appointments: **Robert B. Boyd** as sales manager; **Fred H. Berggren** as assistant sales manager, and **J. Howard Brown** as assistant technical director.

C. E. Hartsing, formerly western sales manager, has been named manager of field sales for Toledo Pipe Threading Machine Co.

C. Allen Fee has been elected vice president and secretary of ACF Industries Inc. He has been secretary of the firm, its predecessor and subsidiaries since 1950.

R. T. Barnes Jr. of Burlingame, Cal., has been named West Coast representative for the complete line of Noble & Wood Machine Co.

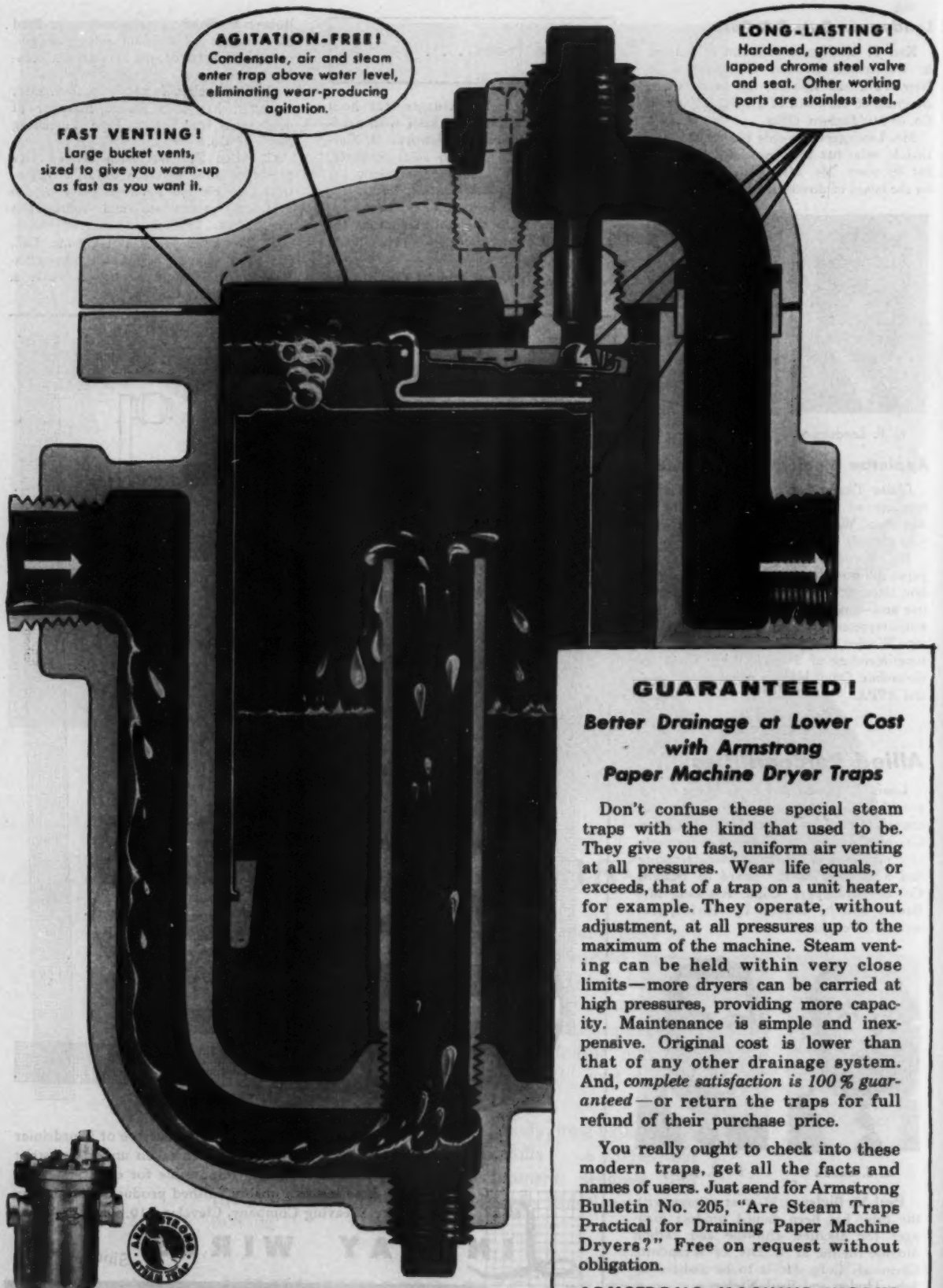
Allied News . . .



Operation by operation, the manufacture of Fourdrinier wire cloth at Lindsay, has been taken under our strict control. To be directly responsible for quality step by step is to insure a quality finished product. The Lindsay Wire Weaving Company, Cleveland 10, Ohio.

LINDSAY WIRES Since 1904

FOR PAPER MANUFACTURING


AGITATION-FREE!
Condensate, air and steam enter trap above water level, eliminating wear-producing agitation.
FAST VENTING!
Large bucket vents, sized to give you warm-up as fast as you want it.
LONG-LASTING!
Hardened, ground and lapped chrome steel valve and seat. Other working parts are stainless steel.

GUARANTEED!

Better Drainage at Lower Cost with Armstrong Paper Machine Dryer Traps

Don't confuse these special steam traps with the kind that used to be. They give you fast, uniform air venting at all pressures. Wear life equals, or exceeds, that of a trap on a unit heater, for example. They operate, without adjustment, at all pressures up to the maximum of the machine. Steam venting can be held within very close limits—more dryers can be carried at high pressures, providing more capacity. Maintenance is simple and inexpensive. Original cost is lower than that of any other drainage system. And, *complete satisfaction is 100% guaranteed*—or return the traps for full refund of their purchase price.

You really ought to check into these modern traps, get all the facts and names of users. Just send for Armstrong Bulletin No. 205, "Are Steam Traps Practical for Draining Paper Machine Dryers?" Free on request without obligation.

ARMSTRONG MACHINE WORKS
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ARMSTRONG
PAPER MACHINE DRYER TRAPS

NAMES in the NEWS

Kaptain Named St. Regis Superintendent

St. Regis Paper Co. has announced that Stephen P. Kaptain, who was formerly director of wood research and development for the southern woodlands, has become resident manager of the kraft pulp, paper and board mill at Jacksonville, Fla.

Mr. Kaptain, who joined St. Regis in 1952 as a conservation engineer, is a 1948 graduate of the University of Michigan. John A. McDermott, who has been mill manager at Jacksonville, will devote his full time to his duties as supervisor of all the firm's paper mills.

S. P. Kaptain

R. M. Mather

Russell M. Mather has been appointed general manager of the Franklin, Ohio mill division of Stone Container Corp. Mr. Mather was formerly board mill superintendent for Robert Gair Co. Inc. at Elkhart, Ind.

Industry Men Named by U. S. Chamber

Two representatives of the pulp and paper industry have been appointed to the 1955-56 Manufacture Committee of the Chamber of Commerce of the United States:

Laurence T. McCurdy, vice president of Container Corp. of America at Philadelphia, and Harold L. Zellerbach, executive vice president of Crown Zellerbach Corp. at San Francisco.

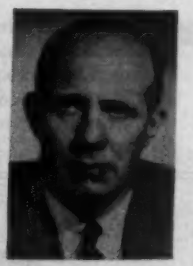
The committee, which considers policies and programs dealing with taxation, labor relations and economic education, is headed by Roy C. Ingersoll, chairman of the board and president of Borg-Warner Corp.

Institute Adds Staffers

Dr. A. Neil McLeod has joined the staff of the Insitute of Paper Chemistry at Appleton, Wis., as research associate in economics. Formerly with Food Fair Stores Inc. and a graduate of the Harvard School of Business Administration, he will engage in teaching and research in the broad field of economics and marketing as related to the paper industry.

In another Institute appointment, Curtis L. Brown has been named bibliographer. A graduate of George Washington University, he was previously an abstractor for the National Research Council.

C. Crispin



R. M. Shaw

A. A. Hugman

A. C. McGougan

MacMillan & Bloedel Appointments

C. Crispin, vice president for pulp and paper for MacMillan & Bloedel Ltd., is now devoting his full time to supervision of manufacture at the company's two mills and to construction details of the expansion at the Port Alberni, B.C. mill, relinquishing his former responsibility in the pulp sales division.

R. M. Shaw, vice president for sales, who has been handling world-wide sales of the company's lumber, plywood and shingles, is now placed in charge of pulp and paper marketing as well.

The appointments of A. A. Hugman as manager of newsprint, paper and board sales and of A. C. McGougan as manager for pulp sales were also announced.

Scott Promotes Baldwin

Paul C. Baldwin, vice president in charge of Scott Paper Co.'s West Coast manufacturing operations, will assume the additional responsibility of directing the company's staff engineering, research and development activities.

Mr. Baldwin succeeds J. Larcom Ober, who retired recently as a vice president and director of Scott.

After graduating from Syracue University, Mr. Baldwin earned his Master's and Doctor's degrees at the Institute of Paper Chemistry. Joining Scott's technical division in 1940, he became manager of the company's main plant at Chester, Pa., in 1947. In 1951 Mr. Baldwin was elected assistant vice president, and in 1953 he was named vice president.

During his 21 years with Scott, Mr. Ober filled many positions in quality control, sales promotion and personnel and in 1936 was elected vice president and general manager of Brunswick Pulp & Paper Co. Mr. Ober returned to Scott's Chester, Pa. headquarters in 1938 and in 1943 was elected a Scott director.

Mr. Ober was named president of the University of Maine Pulp & Paper Foundation in 1953 and, in recognition of his service to his alma mater, was awarded an honorary Doctor of Laws degree last year.

Westvaco Appoints Three

West Virginia Pulp & Paper Co. at Charleston, S. C., has announced the following promotions.

William W. Stuart has assumed the position of commercial manager. Mr. Stuart was employed by Standard Oil of California after graduating from college and left Standard in 1954, later joining the staff of the Charleston mill.

A. Lincoln Burns has become per-

Names in the News . . .

sonnel manager. Mr. Burns was an administrative assistant at the company's Mechanicville, N.Y. mill before he came to Charleston.

A. E. Moorer Jr., formerly personnel manager, has been promoted to the job of market analyst. He joined the Charleston mill staff in 1949 and was advanced to the position of personnel manager in October 1953.

Three Promotions at Hinde & Dauch

Appointment of two divisional production managers for Hinde & Dauch Paper Co. was recently announced.

J. Cheatham Orcutt, production manager at the company's Richmond, Va. plant, will be in charge of production at eastern division factories. Mr. Orcutt joined the company in Richmond in 1930, became plant superintendent in 1939, and was named plant production manager in 1951.

Edward M. Hennessy, production manager at the Chicago factory, will be responsible for western division factory production. Mr. Hennessy

J. Cheatham Orcutt

E. M. Hennessy

joined the company in Kansas City in 1928 and became Chicago plant production manager in 1950.

Hinde & Dauch also announced the appointment of Richard Null as plant production manager at the Gloucester City, N. J. factory. Mr. Null, a veteran of more than 20 years with the company in personnel and production capacities, was assistant plant production manager at Gloucester City until the recent retirement of Theodore David.

Rayonier Advances Three at Grays Harbor Div.

Rayonier Inc. has announced three key personnel changes at the Grays Harbor Div., Hoquiam, Wash.

Otto H. Sangder, formerly chief chemist, was named assistant pulp mill superintendent. Chief chemist since 1941, he has been with the firm since 1931.

Succeeding Mr. Sangder as chief chemist is P. M. Toppari, who since 1950 has been assistant chief chemist. He joined Rayonier in 1931.

Edward Button replaces Mr. Toppari. He became associated with the company in 1950 as a shift chemist. Last year, he was transferred to Jesup, Ga., to assist in the start-up of Rayonier's new mill.

Powell Named by Valentine

Edward L. Powell of Chattanooga, Tenn., has been elected executive vice president and general manager of the Valentine Pulp & Paper Co. plant in Lockport, La. He replaces W. A. Zonner, who resigned recently.

Mr. Powell is one of the developers of the process now being used by Valentine for making paper out of whole bagasse. The Valentine operation is the only such plant in the United States.

William L. Schnorbach has joined Robert Gair Co. Inc. as assistant to C. S. Huestis, director of development for chemical pulp and paper products. He was formerly technical and engineering manager for American Box Board Co.

W. L. Schnorbach

R. E. Woods

Robert E. Woods, former general manager of General Stores Corp., has joined the staff of Continental Can Co. as assistant to Lawrence Wilkinson, group vice president in charge of the firm's non-metal divisions. He will assist in the operations of the fiber drum, flexible packaging, paper container and crown and cork divisions.

Reynold W. Selmser, technical supervisor for Brownville Board Co. in Brownville, N. Y., has been named mill manager to succeed Robert J. Nichols, who has retired as general manager. Mr. Nichols, former president of the firm, will continue on a consulting basis.

These four 30′ x 60′ silos are used by a pulp and paper mill for handling and storing wood chips.

We have erected silo-type bins at hundreds of plants to handle and store bulk materials peculiar to their industries. A few examples are—grain for the milling industry; clay, silica sand, and feldspar for the ceramic industry; ore for the metal industries; molding sand for the foundry industry; cottonseed and soybeans for the vegetable oil industry.

Designing handling and storage systems for around 100 kinds of materials has given us a wealth of experience which is at your disposal. You are invited to write, wire, or phone us.

Not exported except to Canada and Mexico

THE NEFF & FRY CO.

250 ELM STREET • CAMDEN, OHIO

SUPER CONCRETE STAVE STORAGE BINS

Necrology . . .

David Clark Everest

D. C. Everest

David Clark Everest, retired chairman of the board of Marathon Corp., died October 28 at Wausau, Wis. He was 72.

Mr. Everest was widely known in the paper industry for his work in forestry and conservation. Prominent in nearly every phase of the industry for many years, he headed the APPA in 1927-28 and 1937-38.

A native of Pine Grove, Mich., Mr. Everest joined Marathon in 1909. He was president of the Menasha, Wis. firm and of Marathon Corp. of Canada from 1938 to 1952. He stepped down as chairman of the board last December 30.

When he joined the staff of Marathon in 1909 it was as the firm's first general manager. In 1910 he became a director and was elected vice president in 1927. Mr. Everest was named president in 1938 and chairman of the board in 1950.

Mr. Everest was a vice president of the board of trustees of Lawrence College and also a member of the board of directors of the University of Wisconsin Foundation.

A member of the APPA executive committee, Mr. Everest was also a charter member of the Institute of Paper Chemistry at Appleton, Wis., and a trustee of the organization since it was founded. He served successively as vice president and vice chairman of the institute's board of trustees from 1930 to 1955.

Mr. Everest received what technical men consider to be the industry's most significant honor when he was presented the Tappi Gold Medal in 1944. A member of Tappi since 1915, he was the first non-technical man to receive the award.

He had been a vice president and director of Employers Mutual Liability Insurance Co. since 1920; Longview (Wash.) Fibre Co. since 1926; Masonite Corp., Laurel, Miss., since 1926; Employers Mutual Fire Insurance Co. at Wausau since 1935, and D. J. Murray Mfg. Co. since 1951. Mr. Everest had been president of Wausau Paper Mills Co. from 1948 to 1950, at which time he was made chairman of the board of directors.

For over 30 years, Clinton starches and dextrins have helped satisfy "coating-conscious" papermakers.

Clinton is just as interested in coatings as you are. Why? Because a coating — *any coating* — is no better than the adhesive that holds it together and binds it to the paper. Clinton starches and dextrins do an admirable job in both respects.

And if it's "size-satisfaction" you're looking for, Clinton starches are sure to measure up to your most hopeful expectations.

. . . and remember : technical service in connection with your specific problems is available upon request

Quality products

FROM THE WORLD'S CORN CENTER

CLINTON

CLINTON FOODS INC.
Corn Processing Division
CLINTON, IOWA

So good they come back for more

No matter what we say about Hurletron Caliper and Weight Controls, our customers say it better . . . with repeat orders.

For example . . . here are a few items taken from our records within recent months:

CUSTOMER	Recently Purchased	Previously Installed
Sonoco Products Company Hartsville, South Carolina	Wet end control—3 units	Wet end controls for 3 machines
Mac-Sim-Bar Paper Company Otsego, Michigan	Wet end control—3 units to modernize 1 machine	Wet end controls for 2 machines
Cornell Paperboard Products Co. Cornell, Wisconsin	Wet end control—3 units	Wet end controls for 1 machine (in their Milwaukee plant)
Gaylord Container Corporation Bogalusa, Louisiana	Dry end recorder—1 unit (added to previous equipment)	Wet end controls and dry end recorder on 1 machine
Australian Paper Manufacturers Ltd. Melbourne, Australia	Wet end controls—3 units Dry end recorder—1 unit	Wet end controls and dry end recorder on 1 machine
Fibreboard Products Company Stockton, California	Wet end controls—3 units Dry end recorders—3 units	Wet end controls and dry end recorders (in their Vernon, Calif. plant)

So . . . if you want the facts about Hurletron Controls, ask any of these outstanding paper makers. Or we can give you the names of many others. They'll tell you all about the time and labor saving advantages . . . how product quality is established and maintained . . . how costs are reduced. Then, when you've heard their stories, let an Electric Eye engineer show you how this equipment can be applied to your operation to give you the same advantages.

Meanwhile . . . ask for our bulletin which fully explains and illustrates the equipment.

ELECTRIC EYE EQUIPMENT COMPANY

1936 EAST FAIRCHILD STREET, DANVILLE, ILLINOIS

Manufacturers of: Hurletron R.O.P. Color Registration Controls; Automatic Controls of Caliper and Weight on Paper and Board; Center Line and Side Web Guide Controls; Cut-Off and Back-Up Controls; Slitter Controls; Moisture Controls.

ASSOCIATION NEWS

HIGH SCHOLARSHIP wins for William Henry Trice of Geneva, N. Y., a 1955 Fred C. Boyce Student Award, an annual presentation sponsored by the Superintendents Association. Mr. Trice is a student at the State University of New York College of Forestry at Syracuse. At the ceremonies were (l to r) Dr. Edwin C. Jahn, associate dean for physical sciences and research; Dr. Hardy L. Shirley, dean; Harry E. Weston, secretary and treasurer of the Superintendents Association; Mr. Trice, and Prof. F. W. O'Neil. The award carries $200 in cash and is presented each year to an outstanding student at the University of Maine, Western Michigan College and New York State College

Caliper and Weight Control Topic of Supts.

The Hurletron caliper and weight control was the topic of a talk by W. O. Smiley of Electric Eye Equipment Co., Danville, Ill., at a recent meeting of the Michigan Division of the Superintendents Association.

According to Mr. Smiley, the first such instrument to indicate, record and control the thickness of boxboard and paper was produced by his company in 1950. At present, he related, there are 58 board machines equipped with it. He further indicated that research is progressing toward other applications on fourdriniers, supercalenders and coating machines.

The speaker said that the recording feature of the instrument gives supervision a continuous and accurate picture of the production, providing a means of evaluating methods and other controls in the process; that the system maintains a close control on wet end caliper, resulting in extremely small variations of finished caliper and weight; that waste is greatly reduced when making order changes; that the wet end warning light, which exposes machine emergencies as soon as they affect the sheet caliper, also reduces waste, and that other portions of the process—formation, suction, pressing, drying, coating, etc.— become more uniform.

Coming Events

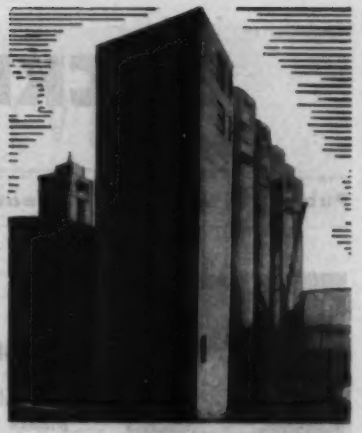
Tappi

Nov. 18-19 — Southeastern Section, Dempsey Hotel, Macon, Ga.

Other meetings

Nov. 14-17 — Second International Automation Exposition, Navy Pier, Chicago

Nov. 15-16 — National Paperboard Assn. Annual Meeting, Waldorf-Astoria Hotel, New York, N.Y.



Save Man Hours

Equip Your Digester House with a

HUMPHREY

Employees' Manlift

ELEVATOR

Eliminate stair climbing—save time—reduce employee fatigue. The endless belt provides continuous up and down transportation to and from sampling and operating floors. Easy and safe to operate with ready-at-hand stop and go controls and the exclusive Humphrey Safety Features.

Can be installed in any Multiple Floor Building

Send us your requirements . . . we'll furnish complete information and prices.

HUMPHREY ELEVATOR COMPANY

Inc.

341 1st Avenue N.W.

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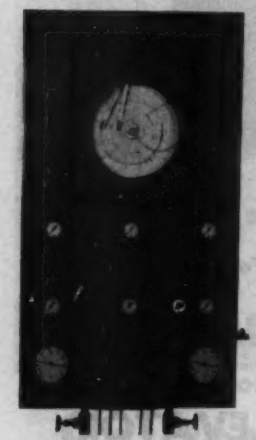
Humphrey is the original Manlift Elevator, made continuously since 1887.

STICKLE NEWS

Stickle Equipment
Cuts the cost of steam

Published by Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 18, Indiana



New "Electric Eye" on Stickle Moisture Control System Automatically Adjusts Dryer Steam Pressure When Break Occurs

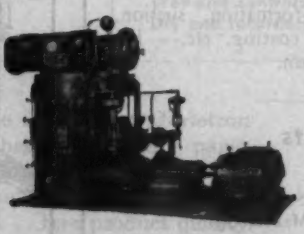
Manual adjustment of steam supply is no longer necessary when a break occurs, thanks to a new "electric eye" control on the Stickle Moisture Control System. Actuated by a photo electric cell, steam is immediately shut off, or reduced to maintain any desired steam pressure during the break. The "electric eye" control is available as extra equipment on new systems, and may be incorporated on those now installed.

The Stickle Moisture Control System automatically maintains the exact moisture content desired in all types of paper within ½ of 1%. It records or indicates moisture variation of the sheet and steam pressure in the dryers . . . restores proper moisture content after breaks up to 8 times faster than former methods . . . eliminates time-consuming hand adjustment of steam flow to dryers . . . cuts steam consumption . . . improves quality and reduces customer complaints. Get the facts in Stickle's Bulletin 360-C.

New Dryer Control Helps Prevent Picking, Curling and Cockling

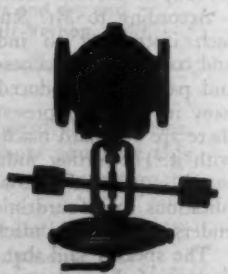
Following successful operating tests, Stickle has introduced a new control that automatically maintains the best temperature on individual wet end dryers. The control improves finish, and helps prevent picking, curling and cockling on all types of paper. It consists of a thermostatic pneumatic pilot controller and diaphragm motor valve. A dial on the controller provides instant setting of any temperature desired. Temperature ranges are 50° F. to 250° F., or 150° F. to 350° F. Once the temperature has been set, the controller actuates the valve which responds quickly to meet the demand requirements of the dryers. Two types of controllers are available. The direct controller (illustrated) is attached to the steam joint on the back side of the machine. A remote controller may be located at any convenient place in the mill. Test results and new literature are available on request.

"X-Ray" view of the Stickle Open Coil Deaerating Feed Water Heater . . . guaranteed to heat more water to higher temperature in less space than any other heater at any price. Capacities: 3,000 to 300,000 pounds per hour.



The Stickle Vacuum Pump is main unit of the Vacuum Differential Drainage System. Single and duplex models. Capacities up to 300 GPM (water) and 290 CFM (air); or 900 GPM (water only).

Stickle Visible Micro Adjustable Orifice permits accurate modulated temperature control on dryers with visible operation. Eliminates steam losses due to excessive "blowing through" into return lines.



Stickle Automatic Differential Valve controls exact differentials in pressure between two sections of paper machine, assuring proper drainage at all pressures.

PATENT REVIEWS

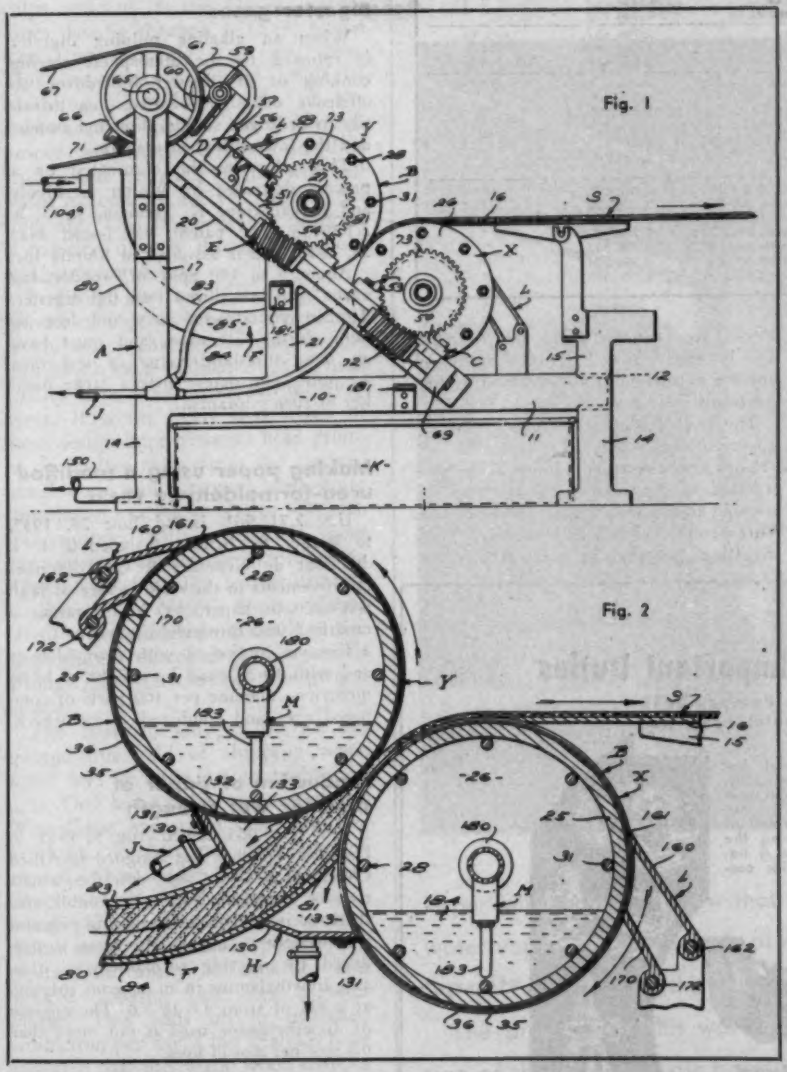


Fig. 1

Fig. 2

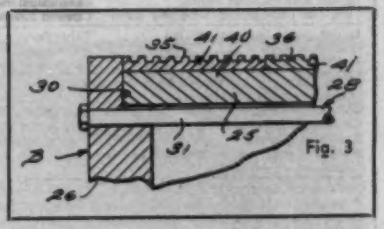


Fig. 3

Melvin Nord*

Papermaking without screens

U.S. 2,693,739, issued Nov. 9, 1954, provides papermaking machinery which contains no wires or screens. According to the inventors, Risaku Okawa and Rüchiro Okawa of Japan, this reduces the initial cost and simplifies maintenance and is used to advantage in the making of heavy paper or pulp sheets from thick solutions, using materials which are difficult or impractical to handle in machines of ordinary construction.

*Patent attorney, 17600 Pinehurst, Detroit 21

The apparatus is shown in Figs. 1 and 2. The sheet 5 is formed by rolls X and Y, the spacing between the rolls being adjustable (D). The rolls are driven (E) in opposite directions. The face of each roll contains drainage grooves 36, as shown in Fig. 3. The feed material is fed to the rolls through a nozzle F. Excess liquids drain through the grooves 36 into the drainage catchers H. Part of this liquid drains down into a drainage catch basin K. The drainage catchers H are also maintained under reduced pressure by a pump attached to the fitting J, this pump recirculating the major portion of the collected liquid back to the feed point. The machine operates without water washing, so that the collected liquid is not diluted.

Each roll is heated by a liquid 184 which is in turn heated by electrical elements 183. As the roll rotates, the heated liquid washes around within the roll, heating it. By providing heat, it is possible to handle materials which could not be worked at normal temperatures.

Recovery of chemicals from black liquor

In U.S. 2,714,118, issued July 26, 1955, to James E. Copenhaver, William A. Biggs, Jr., William H. Baxley, and John T. Wise, assigned to Sonoco Products Co., a method of treating black liquor from neutral or alkaline pulping processes is disclosed, which has the effects of reducing the B.O.D. and recovering acetic acid.

The black liquor is first concentrated to about 50 per cent solids, and then acidified with sulfuric acid to liberate the acetic acid. The acidified liquor is then extracted with methyl ethyl ketone. The acetic acid is then separated from the methyl ethyl ketone by distillation. The methyl ethyl ketone and water distill over as a binary azeotrope, leaving the acetic acid in concentrated form.

Manufacture of high wet-strength paper

U.S. 2,713,539, issued July 19,1955, to William F. Fowler, Jr., Donald R. Spear, and Lee K. Tong, and assigned to Eastman Kodak Co., describes a method of producing high wet-strength paper by beater sizing pulp with a polyalkyl acrylate and a wax dispersion, together with an acidic compound of aluminum.

The patent gives a number of examples of the method.

Production of groundwood pulp from hardwood

U.S. 2,713,540, issued July 19, 1955, to Clarence E. Libby and Frederic W. O'Neil, assigned to The New York State College of Forestry, describes a chemo-

Other Patents of Interest to the Pulp and Paper Industry

Subject	Inventor or Assignee	Patent No.	Date
Carton handhole reinforcement	Anheuser-Busch, Inc.	2,703,197	3/1/55
Apparatus for making fiberboards	Minnesota & Ontario Paper Co.	2,703,513	3/8/55
Machinery for unwinding rolls of paper	The Black-Clawson Co.	2,703,681-3	"
Sheet paper and paper board laminating machine	Harold Dyment	2,704,107	3/15/55
Carton end closure	Oswego Falls Corp.	2,704,179	"
Paper board display carton	Container Corp. of America	2,704,180	"
Enclosing case for capacitors	General Electric Co.	2,704,181	"
Flexible container for mattresses	Cromwell Paper Co.	2,704,183	"
Carton carrier	Loroco Industries Inc.	2,704,222	"
Molded pulp articles	Keyes Fibre Co.	2,704,493	3/22/55
Paper dispensing sheet construction	Rhinelander Paper Co.	2,704,599	"
Carton with pull-out handle	Consolidated Paper Co.	2,704,617	"
Fungicide-impregnated wrapping paper	Copeman Laboratories Co.	2,704,732	"
Folded paper box construction	The Budget Press	2,705,587	4/5/55
Chick box	Birmingham Paper Co.	2,705,583	"
Inclined wall display tray	Container Corp. of America	2,705,559	"
Paper board rim for knockdown paperboard containers	National Folding Box Co., Inc.	2,706,074	4/12/55
Collapsible cartons	Sutherland Paper Co.	2,706,075	"
Container opener	Waldorf Paper Products Co.	2,706,076	"
Absorbent paper	Camp Manufacturing Co., Inc.	2,706,155	"
Method of making a molded lignocellulose product	Carr, Adams & Collier Co.	2,706,160	"
Fully partitioned collapsible carrier	Gardner Board & Carton Co.	2,706,578	4/19/55
Reinforced double-walled insert for cartons	Bergstein Packaging Trust	2,706,590	"
Corrugated board carton for nuts and bolts	General Container Corp.	2,706,591	"
Octagonal paperboard carton	Lorentzen Hardware Mfg. Corp.	2,706,592	"
Paperboard shipping cases for rayon	E. I. du Pont de Nemours & Co.	2,706,593	"
Bottle cases	Waldorf Paper Products Co.	2,706,594	"
Locking device for a container	Gaylord Container Corp.	2,706,595	"

mechanical process for producing groundwood of good quality and high yield from hardwood.

The hardwood blocks are charged to a conventional digester, and subjected to a relatively high vacuum to remove air. A mild treating liquor is then charged to the digester without breaking the vacuum. Digestion is run at about 140°C for six hours, under about 150 lb. gage pressure. The pressure is then relieved and the blocks are removed from the digester. The binding material between the wood fibers is softened but not removed by this treatment.

The treated blocks are then ground in a conventional way.

The improvements obtained are attributed to supperior penetration of the treating liquor into the hardwood blocks. This permits the use of a relatively high digestion temperature without discoloring the pulp. The superior penetration results partly from the evacuation of air and partly from the use of high pressure in the digester.

Star Performers on Important Duties

Aurora Non-Clog Pumps, both Vertical and Horizontal have won high favor

— for industrial by-products, semi-solids, wastes, municipal sewage plants, lift stations, buildings and all duties involving the handling of heavy liquids and liquids containing solids.
AURORA Always PUMPS
Type XGG Aurora Horizontal Non-Clog Pump
Write for BULLETIN 121
Write TODAY for CONDENSED CATALOG "M"
DISTRIBUTORS IN PRINCIPAL CITIES

AURORA® PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY
110 LOUCKS STREET • AURORA • ILLINOIS

Patent Reviews . . .

Improving the odor of digester gases

When an alkaline pulping digester is relieved to the atmosphere during cooking or at digester blowdown, an offensive odor is liberated, due primarily to hydrogen sulfide, dimethyl sulfide, and the lower alkyl mercaptans.

This odor can be eliminated by a process described by Walter C. Meuly and Breckenridge K. Tremaine in U. S. 2,709,133. The patent was issued May 24, 1955, and is assigned to Rhodia Inc.

About 5 to 100 ppm. of "reodorizing agent" are introduced into the digester. The compound used must not lose its odor during digestion, and must have an odor threshold value of less than 10 ppm. The patent lists a large number of such odorants.

Making paper using a modified urea-formaldehyde resin

U.S. 2,711,961, issued June 28, 1955, to Walter M. Bruner, assigned to E. I. du Pont de Nemours & Co., describes improvements in the manufacture of high wet-strength paper, by incorporating a modified urea-formaldehyde resin.

Urea is condensed with formaldehyde and with 10-20 parts by weight of hexamethylene diamine per 100 parts of combined urea and combined formaldehyde.

Production of paper of superior wet strength

U.S. 2,715,065, issued Aug. 9, 1955, to David B. Hatcher and assigned to Allied Chemicals & Dye Corp., describes a new type of thermosetting water-soluble synthetic resin capable of providing superior wet-strength to paper. The resin is produced by reacting formaldehyde, urea, and dimethylamine in an aqueous solution at a pH of from 4.6 to 7.0. The amount of dimethylamine used is not more than 0.3 mol per mol of urea.

Pulp Chips

(Continued from page 756)

tained on successive screen meshes of 3/8, 5/8, and 7/8 in. Otherwise, the entire shipment can be subjected to complete rejections. Deductions are made amounting to twice the weight of those chips retained on the 1 1/8-in. screen, provided this volume is in excess of 3 per cent of the total volume by weight. Similar deduction will be made for chips which pass through the 3/16-in. screen provided the quantity exceeds 1 per cent. Bark content

of shipment must be less than 1 per cent by weight."

After nine months, the pulp mill with the above specifications has experienced a reduction in the amount of chips retained on the 1⅛-in. screen from 12 to 6.3 per cent. Also, bark content has been reduced from 4 to 0.75 per cent. An average analysis for chips recently received from six outside sources show 1.75 per cent of chips retained on the 1⅛-in. screen. Fines passing through 3/16-in. screen total approximately 0.65 per cent. This improvement is the result of educating sawmill operators of the importance of proper knife settings, proper sharpening of knives and bed knife, and showing them why all waste material is not yet suitable for chipping. This phase of the program is handled directly through the pulp mill superintendent.

Probably the most startling outgrowth of this program is the almost revolutionary changes in chipper design which have enabled chips of high quality to be made from sawmill leftovers. It seems likely that many of these design improvements hold promise for better chips from the conventional wood room chipper. Multi-knife chippers, operating at 600 to 900 rpm and equipped with forced-feed spout mechanisms, are capable of producing chips of good quality and uniformity — these chips coming from material oftentimes considered too small in size to produce a decent chip if processed through a conventional pulpwood chipper.

The Norman chipper design has entered this field of chipping waste wood and is showing creditable results. One large pulp company on the West Coast has stated that chips are so clean cut that very little sign of bruised fiber ends is to be seen. Coupled with the feature of exceptional chip uniformity, this concern claims more rapid liquor penetration, greater uniformity in cooking, and reduced cooking time per digester charge. This adds up to increased production per day. Chip analyses have indicated that this waste wood chipper can produce unscreened chips yielding no more than 5 per cent in oversize; 2 per cent fines, and 95 per cent in the ½- to ⅞-in. size class.

National Safety Congress

(Continued from page 763)

safety director for Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Robert W. Wood, staff safety supervisor for Kimberly-Clark Corp., Neenah, Wis.; W. B. Ballinger, safety coordinator, Brunswick Pulp & Paper Co., Brunswick, Ga., and James Emmerich, safety di-

(Continued on page 797)

What, actually, do Vacuum Pumps on paper machines handle?

Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

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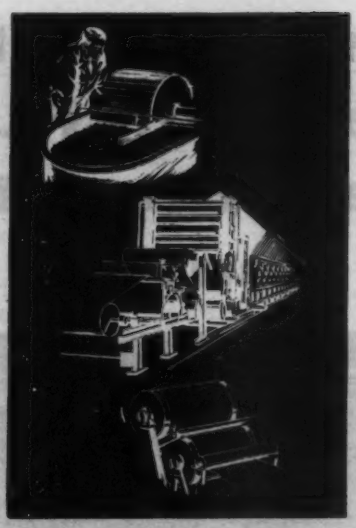

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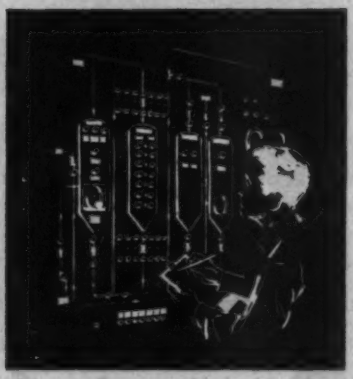

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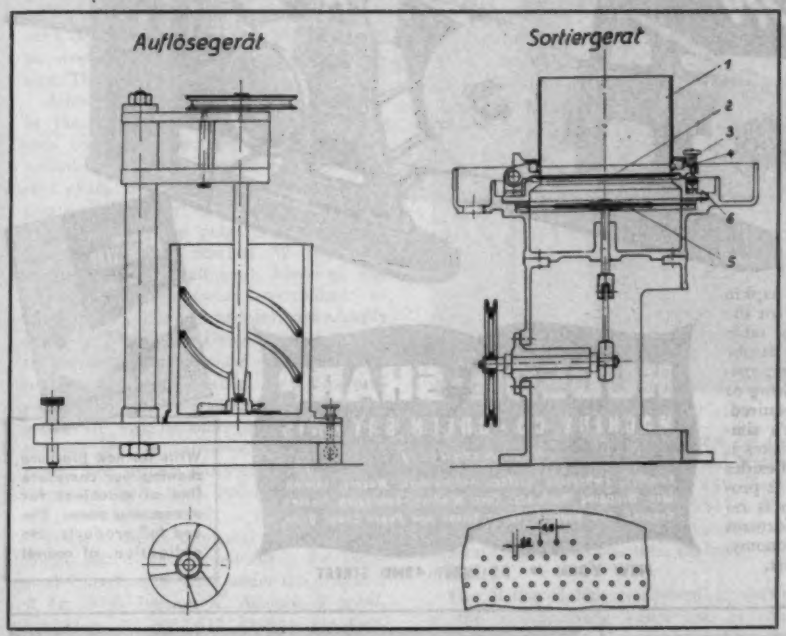
FOREIGN ABSTRACTS



Study of the disintegration of pulps and papers in water

Using a disintegrator and a screening apparatus (both shown in the accompanying diagram as "Auflosegerat" and "Sortiergerat" respectively), the authors studied the rates of defibration of various pulps and papers, under carefully standardized conditions.

The samples used were strips (5 X 7 cm.) in such number that their weight totalled 40 grams in each experiment (calculated on the oven-dry basis). The stock density used was 2 per cent, and the usual run was made at an initial temperature of 15° C. with the disintegrator operating at 1600 rpm.

Data are given graphically for disintegrations that were carried to a point at which only about 5 per cent of non-defibered material remained. The samples used were a coniferous bleached kraft pulp, bleached beech and aspen sulfite pulps, birch and straw kraft pulps, unbleached spruce and pine kraft pulps, air-dried and moist groundwood, blotting paper, partially sized newsprint, manifold paper, a series of fully sized writing papers, a cardboard, and a glassine sheet. Of these, the blotting paper and the bleached coniferous pulp were the most rapidly disintegrated, whereas a fully sized paper (that had been treated with a synthetic resin) showed the slowest disintegration. In general, the higher the temperature of disintegration, between 12 and 60° C, the more rapid was the defibration. Walter Brecht and Sylvia Schmidt. *Wochbl. Papierfabr.* 83, 471-475 (1955) (in German).

Uses of sorghum in papermaking

This is an illustrated descriptive article, which includes a (cover) half-tone of the mill at Saix (in the French Midi) which manufactures sorghum pulp.

The author outlines the cultivation of sorghum, especially raised for papermaking, which gives yields of 17-20 tons of the raw material per hectare (i.e. 2.47 acres). Sorghum easy-bleaching pulp is obtained by brief cooking at ordinary pressure with caustic soda, and the chemical consumption appears to be low. Yields of 45-50 per cent are obtained, and at times laboratory yields reached 60 per cent. The resulting pulps showed very good strength properties, which are reviewed briefly and compared with those of pulps from other fibers. Costs are relatively low. René Escourrou. *Papeterie* 77, 481-487 (1955) (In French).

Extractable components of sulfite spent liquor

Neither resin acids nor sterols were found in spruce sulfite spent liquor. Small amounts of acetic acid and formic acid were present. The best solvent for extraction of the various components was found to be butyl acetate.

After this solvent had been removed, an oily residue remained, (up to 1.8 grams per liter). This, when extracted with ethanol, gave *conidendrin* and the hydrocarbon *melene* (which is either $C_{30}H_{50}$ or $C_{30}H_{52}$) whose structure is still unknown, and which melts at 59-63° C.

A second solvent extraction with ether yielded a mixture of unexplored compounds of high molecular weight. A third extraction with petroleum ether gave a mixture of paraffin hydrocarbons, and terpenes and esters similar to those isolated from spruce oils.

The remaining residue, which was insoluble in petroleum ether was then soluble in ethanol and consisted entirely of phenolic compounds, in a complex mixture which was subjected to chromatographic separation, thus giving 25 different substances some of which were identified, and which are still being studied.

The compounds completely or partially recognized included: *vanillin, vanilloyl-acetyl, vanillic acid, conidendrin, dihydroconiferyl alcohol, a dimeric guaiacylpropane derivative* ($C_{20}H_{24}O_5$), and *3,3'-dimethoxy-4-4'-dihydroxystilbene*. The possible future application of spent liquor products is discussed briefly. E. A. Kvasnicka and R. R. McLaughlin (Univ. Toronto) *Pulp & Paper Magazine of Canada*, 56, No 10, 125-127 (1955) and *Canadian J. Chem.* 33,637 (1955).

The "tree of heaven" as a fibrous raw material

Ailanthus glandulosa (*vel altissima*), the so-called "tree of heaven", reaches a height of 15-20 meters in about 40-50 years, but despite its rapid growth is a dense hard-

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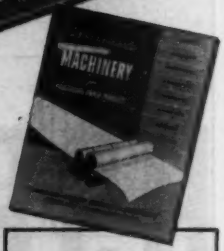

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wood with a specific gravity (when oven-dry) of 0.63. The mean fiber length of the wood is about 1.2 mm.

The tree lends itself readily to propagation, and chemically the wood resembles that of other angiosperms. It contains 21.9-22.1 per cent lignin, 49 per cent (Kurschner) cellulose, 20.4 per cent pentosans and an over-all methoxyl content of 5.7 per cent. The tree is easily barked.

Ailanthus wood could be readily cooked by the usual processes. Thus a laboratory soda cook gave 49.3 per cent pulp. The sodium bisulfite process gave 51-53.8 per cent yields; and the calcium bisulfite digestion gave yields of 49.2-54.5 per cent. The brightness of these pulps was quite high and in one case reached 72 per cent.

The pulps were all easily bleached, and were actually somewhat overcooked, so that future cooking schedules undoubtedly could be shortened. Despite the fact that these were soft pulps their strength properties were deemed satisfactory. Ailanthus pulps could find uses in the paper industry which are met by other hardwood pulps, and can also be converted into dissolving pulps. The surface gloss of ailanthus pulp sheets was quite high, and its use in printing papers is suggested.

Much of the experimental work described in this article was carried out at the Technical University at Graz under the direction of Dr. F. E. Brauns. K. Adamik. *Wochbl. Papierfabr.* 83, 667-672 (1955) (in German).

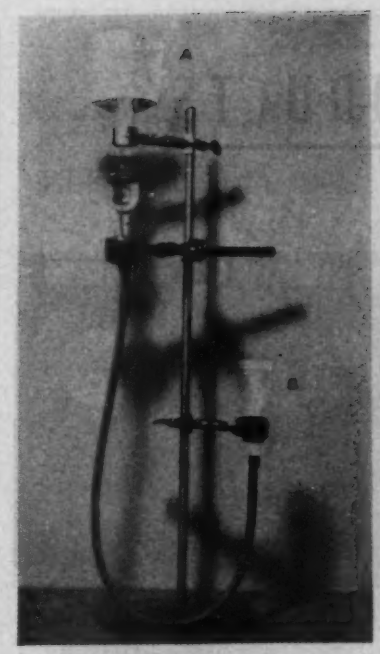
The airsonic industrial stethoscope

This piece of equipment is used for inspecting and testing moving machinery while under a load. It consists of a solid metal body, one end of which is hollowed out, thus forming the bottom of a resonance cavity. A closing disk serves as valve. The capacity of the cavity is adjusted by a manually-operated screw so that the volume can be regulated to the sound frequency of the area that is being inspected. In its application to paper mill machinery, the stethoscope serves in showing traces of wear, metallic fatigue, or other types of imperfections prior to a mechanical breakdown. Anon. *Paper Maker* (London) 129, No. 3, 197 (1955); through *Bull. Inst. Paper Chem.*, 25, 718 (1955).

Initial wet strength of paper webs

The measurement of initial wet strength of groundwood and newsprint are studied, using Brechts apparatus for testing tensile wet strength (*Svensk Papperstidn.*, 50, 63 [1947]) and von Alfthan's wet web burst tester (*Paper and Timber* [*Finland*], 35, 68 [1953]).

The author also studies various ways of preparing sheets having a desired moisture content. These include drying between blotters, drawing air through the web, and applying a constant hydrostatic



tension to the water in the sheet by the porous plate method of Barkas and Hallan (*World's Paper Trade Review*, 139, *Tech. Convention* No. 52 [March 1953]). The latter gives a much smaller variation in replicate determinations than the other two methods.

The Barkas-Hallan equipment is shown in the accompanying figure and is considered advantageous in cases when the moisture content determination of each sheet is impractical, as in rapid routine quality control testing in groundwood and paper mills. When the porous plate method is used, the standard deviation of the initial wet strength values is found to be 6 per cent of the mean value for measurements, both by the Brecht instrument and by that of von Alfthan. Thus, the accuracy is the same for either piece of apparatus. Fourteen figures and 25 references are given. Roy Hallan. *Norsk Skogindustri*, 9, 195-203 (1955) (original in Norwegian, with brief English summary).

Groundwood studies with a small refiner

A conical refiner, only 27 cm. in length, which was developed by Escher Wyss, is fully illustrated in the present article. It is used in a screenings refining study.

The refiner, which has a diameter of 171 mm. at the large end and 93 mm. at the small end, has a direct power intake of 12 kw. Despite its diminutive size, the performance of this refiner is comparable to those of larger refiners, both in regard to shive elimination and to energy demands. Using a consistency of 1.5 to 2 per cent, at least as much as 160 kilos of screenings can be refined per hour, and amounts as low as 42 kilos can also be processed. When a decrease in freeness is to be avoided, a pressure corresponding to 10-11 kw. is applied. When pulp freeness can be reduced, the use of high consistency and low input results in relatively low energy demands. Walter Brecht and Heinz Hohenschutz. *Das Papier*, 9, 199-203 (1955) (in German).

Impregnation in the sulfite digestion

Very rapid impregnation with cooking liquor was obtained when the air occluded in wood chips was removed. In consequence, the cook could be brought to maximum temperature within a relatively short time.

Various impregnation procedures were used. These were: steaming with pressure impregnation; evacuation followed by cold impregnation, and impregnation of the chips following the Va-Purge process. The first two methods resulted in greatly reduced cooking schedules, and the resulting pulps had satisfactory properties. The Va-Purge also resulted in shortened cooks, the pulp yields were high, and the degree of pulping was lowered. However, there was relatively little screening material.

The authors discuss these results quite fully. When the chips were steamed at atmospheric pressure, less air was removed (for the same steam consumption) than when the Va-Purge treatment was used. The differences in behavior of handmade chips versus those made in a chipper are described. Twenty references are included. Hans Sadler and Othmar Trantina. *Das Papier* 9, 317-326 (1955) (in German).

Porosity analysis exemplified by cigaret filters

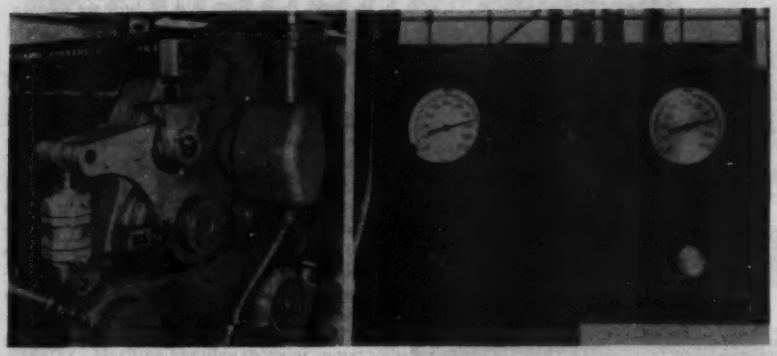
Six different types of cigaret filters were investigated, and 23 of their chemical and physical properties were determined. The porous structures of these filters received special attention, and their entire structure as well as those of the materials used in their manufacture were studied.

In these studies some new methods were introduced (and some older techniques were also used). The results were subjected to statistical analysis, and these evaluations led to quality correlations that allowed the investigator to rank the six filters in their order of performance.

In each case the nicotine absorbed in smoking a cigaret (in a suitable apparatus) was used as a measure of filter quality. The suitability of a specific filter evidently depended on the structure of the entire filter, rather than on that of the materials used in its construction. The ratio of air resistance to bulk was shown to be a good means of judging the suitability of the filter. Good filter structures resulted from using a material of high basis weight and a high degree of creping.

Actually the chemical properties of the filters had little influence on their ability to absorb nicotine. Equipment for determining the pore size distribution is fully described with appropriate illustrations. Porosity data are tabulated and are shown graphically, and the apparatus for mechanically smoking the cigarets is also illustrated. Ten references are included. Heinz Corte. *Das Papier* 9, 290-295 (1955) (in German).

NEW PRODUCTS



Hydraulic Loading System

The development of a hydraulic loading system for the precise adjustment of pressure rolls on heavy-duty corrugators to assure maximum uniformity and strength in the bond between the medium and the liner of corrugated board has been announced.

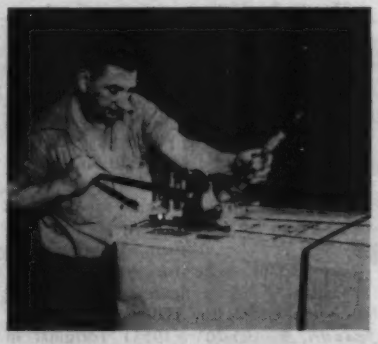
Among the advantages of the hydraulic system, which is adjusted by the turn of a valve, are greater strength in the corrugated board, reduced Mullen test deterioration, improved appearance, simplified inspection, and better printing surfaces.

In the heavy-duty corrugator, the pressure roll maintains the proper pressure at the point at which the liner is bonded with adhesive to the corrugated medium. If the pressure is too great, the board will be marked or cut, reducing its strength. If insufficient pressure is applied, the board will separate because of improper bonding.

The hydraulic apparatus is operated by two pumps, each driven by 3/3-hp., 1800-rpm motors. These pump oil from a storage tank to hydraulic cylinders located at either end of the pressure roll. The rolls are mounted on pivoted arms. As the operator applies pressure by turning two valves — one for each cylinder — the arms move the roll into the desired position and hold it there firmly.

Pressure readings can be observed on a simple conveniently located control panel which holds the valves. This permits continuing inspection of the pressure and adjustment. Each cylinder is equipped with a safety device — a hydraulic accumulator — which provides a cushioning action and prevents damage to the corrugator in the event of a wrap-around. Nitrogen is used in the accumulator because it is inert and if mixed with oil will not explode. A pressure control valve permits oil to run back into the storage tank if too much accumulates in the system.

A selector switch raises or lowers the pressure automatically to facilitate threading, and according to the manufacturer, this hydraulic system can accommodate itself to uneven paper, a feature not possible with the unyielding hand adjustment method. *Samuel M. Langston Co., Dept. PI, Camden, N. J.*



Strapping Machine

Available now is an air-powered strapping machine that automatically tensions strapping and then seals and cuts it off in two easy motions. This semi-automatic Model AP tool, the only one of its kind on the market, is said to be fast and efficient for the strapping of skid and pallet loads.

Power driven, it speeds the entire operation by eliminating the major causes of operator fatigue. It provides uniform, predetermined tension which may easily be adjusted up to 1600 lbs. This tool is precision engineered to furnish high-joint strength and is ruggedly built for low maintenance. It is designed for use with 5/8- or 3/4-in. steel strapping. Due to its cast aluminum alloy base, it is only a few pounds heavier than a hand operated seal-feed tool. The easy-loading magazine has a capacity of 75 seals.

According to the manufacturer, this tool has been successfully tested in the paper industry. *Signode Steel Strapping Co., 2600 N. Western Ave., Dept. 9P, Chicago 47, Ill.*

Hydraulic cylinder packings

Chemically inert piston cup, U-cup and flange packings have been developed to answer present-day hydraulic cylinder packing problems. Made of Teflon, they are said to provide positive protection against the corrosive action of all types of synthetic nonflammable fluids.

The new packings can be used at operating temperatures to 350°F. They are self-regulating to compensate for pressure. They are said to be meeting all performance requirements, even under the most severe conditions.

Piston cup packings are available in a standard range of nominal cup sizes from 1 to 12 in. Others are available on specification. They are recommended for pressures to 2,000 psi. U-cup packings are furnished either to piston or cylinder specifications and are recommended for pressures to 1,500 psi. Flange packings are available to specification for pressures to 2,000 psi. *Crane Packing Co., Dept. PIC, 1800 Cuyler Ave., Chicago 13, Ill.*

Automatic drive for lift trucks

A new and simplified torque converter-type drive, called Hystamatic drive, is now offered for the 3,000-lb. capacity UC-30 and the 4,000-lb. capacity YC-40 lift trucks. The Hystamatic has latest design improvements with fewer moving parts than comparative models, according to the manufacturer, who also states that a smooth flow of power eliminates any engine lugging, creating faster maneuverability and greater work output.

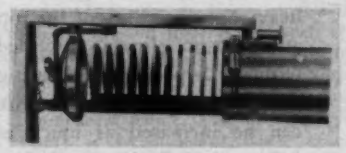
The design of this drive includes a clutch for precise speed regulation when combining the traveling and hoisting operation. Partial engaging of the clutch allows a reduction in traveling speed while retaining fast lifting speed, according to the manufacturer. This factor enables operators to raise loads at maximum rate while maneuvering into load position. Unlike machines with "creep" controls, there is no delay between pressure on the clutch control and actuation of the clutch, it is claimed.

The drive assembly combines lift truck transmission and drive axle in one unit. Final internal gear reduction is 3.1 at wheels. All gears and bearings operate in oil from common supply continually maintained at proper working temperatures by rotation of the converter, which draws

air through the drive and housing. *Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore.*

Indicating and recording tachometer

This indicating and recording tachometer automatically records the operation of the machine on which it is installed. It is said to increase operating efficiency and cut production costs. Speed and rate of production and every change in speed are shown, as well as starting and stopping times, slowdowns, and non-productive periods, time and duration of each, and the actual production and idle time. The tachometer also keeps a complete record of production. *Amthor Testing Instrument Co., Inc., 45 Van Sinderen Ave., Brooklyn 7, N. Y.*



Horizontal filters

New features that are said to speed up operation and simplify recovery or disposal of filter cake are now being built into Industrial's line of horizontal filters. These include a quick-opening, hydraulically-operated and sealed door, and filter leaves which lift out and snap back into place without bolts. An optional vibrating attachment shakes off the filter cake, eliminating the need for scraping or shaking by hand.

Standard features include power or manual withdrawal of leaf assembly, completely exposing all the leaves; bottom outlet; air drying facilities, and optional leaf spacing. *Industrial Filter & Pump Mfg. Co., 5900 Ogden Ave., Chicago 50, Ill.*

Flocculating agent

Development of a new synthetic resin flocculating agent for use in disposal or recovery operations involving clarification, sedimentation, or filtration has been announced.

Called Good-rite K-720, the material serves to collect small solid particles into larger clusters. The formation of clusters or floc facilitates separation of the dispersed solids from the liquid. The agent is said to improve the degree and rate of sedimentation and, at the same time, improve the filtration rate characteristics of dispersed solids. In filtration, flocculation with K-720 forms a more porous filter cake, with resultant reduced pressure drop and increased throughput. Efficient washing of the filter cake is more easily accomplished, it is claimed.

Treatment with as low as .01 lb. of K-720 per ton of dispersed solids normally is sufficient, according to the manufacturer. The resin is also available as a 20 per cent water solution identified as Good-rite K-720S.

In the paper industry, the use of this flocculating agent permits the reclamation

last

much longer between replacements!

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TISCO one-piece Jordan Plugs and Liners are machine finished outside and inside to correct dimensions for accurate fit and operational requirements. No "grinding in" is necessary. TISCO Alloy Steels thrive on hard service, particularly where heavy impact and abrasive conditions prevail. The extremely slow rate of wear of TISCO fillings insures a much longer period of uninterrupted service between replacements.

TISCO long-lived Alloy Steel Plugs and Liners are made to fit any Jordan. Ask us for full information.

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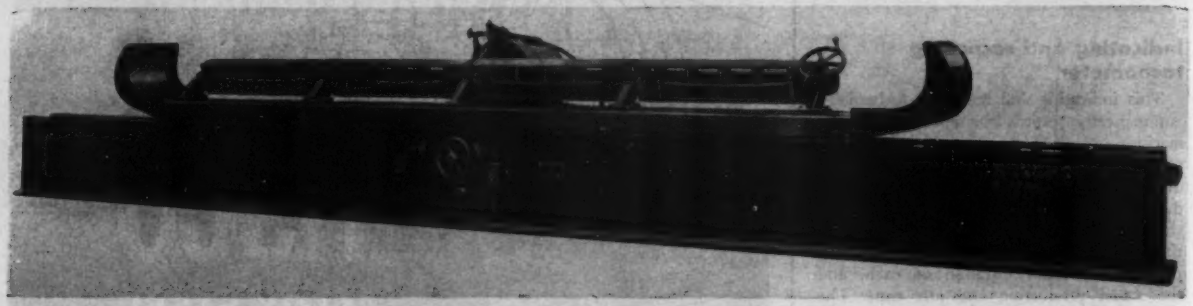
ROGERS SERIES 220 MASSIVE KNIFE GRINDER



SERIES 220 . . . is a powerful, new design for high production and fast grinding of all heavy duty straight chipper and paper knives. Model illustrated above handles knives up to 220" long. Its sturdy cabinet base is 30' long and its entire weight is more than 10 tons.

Variable reversing motor drive allows for slow and fast table traverse. Self-aligning 5" wide V-ways on cabinet base and carriage absorb grinding pressures, permit heavy cuts without vibration. Magnetic chucks are available to further speed the grinding cycle and reduce setting time.

Other features assure long life and accuracy. Ask about the Series 220 . . . many sizes. Write today!

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1% on **dry** fibre weight **effective** (add it to water under agitation in **pulper** or **beater** prior fibre.)

For further details **see page 233 of Paper and Pulp Mill Catalogue, 1955-56 Edition.**

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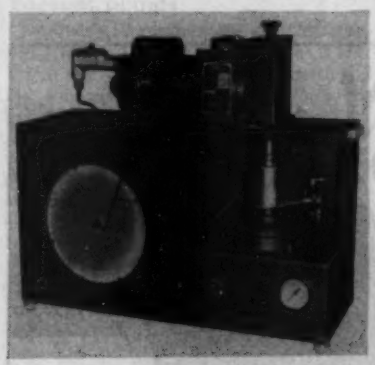
of white water, saving cellulose fiber, clay, and pigment while reducing contamination in waste disposal. *B. F. Goodrich Chemical Co., 324 Rose Bldg., Cleveland 15, Ohio.*

Solvent welding pipe fittings

A complete line of solvent welding pipe fittings and flanges of injection molded unplasticized polyvinyl chloride has been introduced. They are the first to be produced on a commercial scale by the injection molding process.

According to the manufacturer, solvent welding fittings permit fast, easy installations to be made with a minimum of tools and equipment. Since both the fitting connecting surface and the pipe connecting surface are smooth, there is no notch effect. Polyvinyl chloride piping systems fabricated with solvent welding fittings are recommended where installations are of a permanent nature. The threaded type of fitting is recommended where disassembly, revamping or revising of the systems may be required. Solvent welding fittings, rather than threaded fittings, are preferred in the erection of Schedule 40 piping, since they result in more durable installations. *Tube Turn Plastics, Inc., 224 East Broadway, Louisville 1, Ky.*



High shear viscometer

A new high shear viscometer has been developed for testing the flow properties of pigment suspension in the manufacture of paper and other products. Offering a new approach to the design of rotational viscometers capable of producing high rates of shear, this viscometer uses a pneumatic system instead of springs in measuring and recording the shearing force in torque.

The basic principle of this instrument involves measuring a force by automatically supplying a counter balancing force. This latter force is established by a pneumatic pressure imposed upon a known area. The measurement of this pneumatic pressure then becomes an accurate measure of the torque developed by the viscous drag.

The final output air pressure, or viscous drag, is recorded by the viscometer's ring balance gauge, which simultaneously records the rate of shear.

The pneumatic measuring system simplifies range changing and does not require disassembly or substitution of components, according the manufacturer. It is substantially free of mechanical hysteresis. Its operation is linear, extremely sensitive, and has high-speed low-range starting response. The calibration can be verified easily at any time. *Hagan Corp., 323 Fourth Ave., Pittsburgh 30, Pa.*

Lubricant Gun

A new, compact, lightweight air-operated lubricating gun has been designed to meet field and plant maintenance needs.

This self-priming plug valve lubricant gun, the new Hypregun, weighs 39 lbs. and operates on air pressures up to 150 psi. It is recommended especially for large-scale valve lubricating.

A specially designed air motor and double piston construction provide the self-priming action. This new gun uses 5-qt. lubricant cans which are loaded directly into the gun, eliminating all manual handling of lubricant or changing lubricant from one container to another. *Meter & Valve Div., Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.*

Potentiometer

A new recording wide-strip potentiometer which features full-scale pen travel has just been announced. The pen of the High-Speed Electronic Dynamaster recorder makes the traverse across the 11-in. chart

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Here James Baney and Clarence Reed are making a final, inch-by-inch examination of a large fourdrinier wire. Though this is a final check, it is only one of many given it at every stage of its manufacture, from the casting of the alloys in our own foundry to the stretching table inspection shown above.

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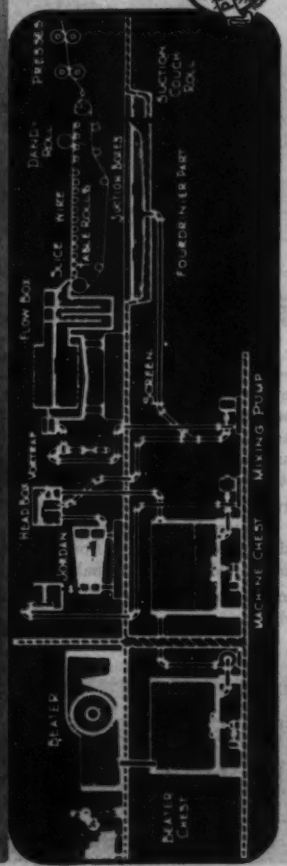


New Products . . . . . .

scale in 0.4 of a second without overshoot at the end. The deadband of the instrument is less than 0.1 per cent of the full-scale span. It is offered with standard ranges as low as 1 millivolt for full/scale, with soure resistance up to 10,000 ohms.

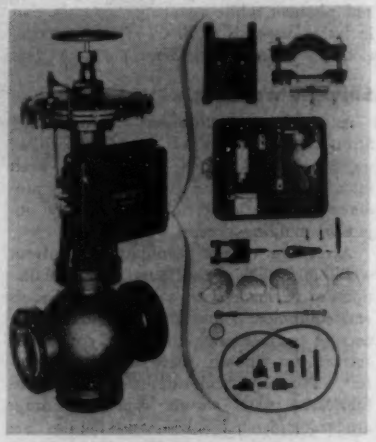
A specially designed recording pen and pen carriage are used to assure continuous inking at the high speeds, and to prevent damage when the pen comes to the end of the scale.

A Thyrite voltage regulator is used in the field circuit of the feedback damping generator to provide constant damping voltage, regardless of line voltage variation. The amount of damping is adjustable, as is the amplifier-gain setting. *Bristol Co., Waterbury 20, Conn.*

Adhesives

A new adhesive, under the name of Staybind Waterproof Corrugating Starch No. 5030, is now on the market. Its principal use is for the manufacture of waterproof corrugated paperboard.

The primary advantages of the new product are good waterproof characteristics and, being alkaline, it permits production speeds equal to those obtained with conventional starch corrugating pastes. According to the manufacturer, extensive tests proved the adhesive effective in plant runs on a wide range of materials including hard-to-stick sulfur and asphalt impregnated mediums. *A. E. Staley Mfg. Co., Decatur 60, Ill.*



Positioning relay kit

A new positioning relay kit is now available for field application to any air-operated control valve. The manufacturer claims that this relay will solve such major valve positioning problems as stuffing box friction load, poor response, unbalanced inner valves, hysteresis, and undesirable regulating characteristics.

RES-LIN wire saver SUCTION BOX COVERS are PROVEN by TEST

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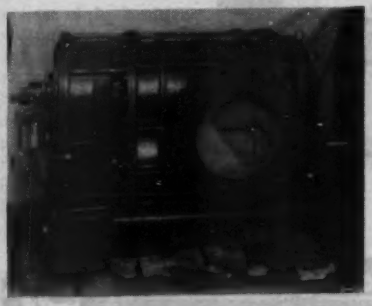
Where control valves are integral with control systems, this relay is particularly useful in maintaining stable sensitivity and response, amplifying control signals, and providing sequence operation of two or more valves.

Standard SAMA signal ranges of 3-15 psig or 3-27 psig actuate a force-balance mechanism. As little as 0.065 psig input signal change will apply full output (50 psig max.) to valve motor. Relay is direct or reverse acting and suitable for top or bottom-connected valves. Six pre-shaped cams are supplied for square root, linear, square, and half-travel regulating characteristics. Further field shaping is simplified by polar co-ordinate imprints on cams. A spring clip locks supply and by-pass air valves in place. A dust- and moisture-tight cover gasket protects the simple and sturdy relay mechanism. *Bailey Meter Co.*, 1050 *Ivanhoe Rd., Cleveland* 10, *Ohio.*

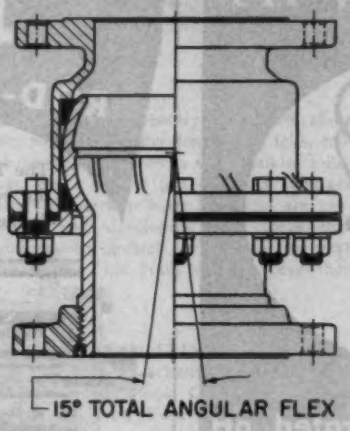


Vacuum pumps

Available in a range of graduated capacities from 50 to 12,000 cfm air, Standardaire vacuum pumps operate at relatively low horsepower and may be used for paper drying at each successive step along the production flow. Vacuums between 20 and 24 in. of mercury can be achieved in a single stage. A two-stage operation may easily be effected for higher vacuums. Only a small quantity of water needs to be injected to control temperature.

Intermeshing male and female rotors work together in a sealed housing at a clearance of only a few thousandths of an inch to provide a nearly perfect air seal. Since the rotors actually never touch, no friction wear results and no internal lubrication is required.

Model 175X32, when operating at 1200 rpm, is considerably within the range of a 400-hp motor. Air-moving capacity is 8,800 cfm at 20 in. of mercury, 8,600 at 22 in. and 8,300 at 24 in. *Read Standard Corp., Blower-Stoker Div.*, 370 *Lexington Ave., New York* 17, *N. Y.*



Ball joints

Ball joints of a new design in 8-, 10- and 12-in. sizes are now being offered and flanged end and welding end patterns may be ordered in steel or Bar-Ductile metal. Flanged end joints are available with 150- or 300-lb. flanges. Joints with welding ends are suitable for 600-psi steam and operating temperatures up to 1000° F. Both patterns may be equipped with Barco's general-purpose special composition No. 11 gasket for gasoline, oil, water, non-corrosive chemicals, and steam up to 300 lb.

Outstanding advantages of these three ball joints are their resistance to fire (unaffected by 45 min. exposure to fire at 950° to 1200°F.), and the 15° angular flexing, which provides greater safety in tank settling, alignment piping, earthquake tremors, and thermal expansion. *Barco Manufacturing Co., Dept. J-20, 500 Hough St., Barrington, Ill.*

National Safety Congress

(Continued from page 787)

rector for Mosinee Paper Mills Co., Mosinee, Wis.

Visual Aids Committee: Charles R. Hagan, safety manager for Oxford Paper Co., Rumford, Maine, (chairman); Charles W. Suggs, safety coordinator for Sonoco Products Co., Hartsville, S.C., and J. P. Dixon, safety director for Chesapeake Corp. of Virginia, West Point, Va.

Paper Manufacturing Division

Division Chairman: Robert J. Gell, staff assistant for the Paper Mills Div. of Eastman Kodak Co., Kodak Park Works, Rochester, N.Y.

Publications Committee: A. E. Topmiller, safety supervisor for Champion Paper & Fibre Co., Ohio Div., Hamilton, Ohio (chairman); Frank Lewis, safety supervisor for Bowaters Southern Paper Corp., Calhoun, Tenn.; Loren Thompson, safety coordinator for Marathon Corp., Menominee, Mich., and Merlin C. Race, safety engineer for St. Regis Paper Co., New York, N.Y.

Visual Aids Committee: Harry J. Hahn, safety director for Hammermill Paper Co., Erie, Pa. (chairman); George V. Johnson, secretary, Industrial Relations Committee, American Paper & Pulp Assn., New York, N.Y.; William Van Hout, safety coordinator for Kimberly-Clark Corp., Kimberly, Wis., and V. C. Gault, general safety supervisor for Crown Zellerbach Corp., Portland, Ore.

Paper Converting Division

Division Chairman: Robert W. Gray, safety director for Union Bag & Paper Corp., Savannah, Ga.

Bag Manufacturing Committee: Harold Hewitt, assistant personnel manager for Bemis Bros. Bag Co., Peoria, Ill. (chairman); John T. Warren, director of training for the Multiwall Bag Div., St. Regis Paper Co., Pensacola, Fla., and Charles H. Mason, safety and training director for Robert Gair Co. Inc., New York, N.Y.

Box Manufacturing Committee: Forrest E. Kimmell, safety and medical director of Sutherland Paper Co., Kalamazoo, Mich. (chairman); Dennis C. Triplett, director of industrial relations and safety for the Folding Paper Box Assn., Chicago, Ill.; Carl J. Lambert, personnel manager of O. B. Andrews Co., Div. of Container Corp. of America, Chattanooga, Tenn., and William A. Oliver, safety supervisor of Gardner Board & Carton Co., Middletown, Ohio.

Roofing Manufacturing Committee: Carl L. Eddins, assistant insurance manager for Flintkote Co., New York, N. Y. (chairman); Hugh M. Jackson, manager, industrial health program of Johns-Manville Corp., New York, N.Y.; Thomas J. Tobin, safety director for Lloyd A. Fry Roofing Co., Summit, Ill., and H. R. Mesler Jr., safety director for Ruberoid Co., New York, N.Y.

Insulation Manufacturing Committee: Amos S. Keen, safety director for Armstrong Cork Co., Lancaster, Pa. (chairman); W. S. Brewster, safety director for Masonite Corp., Laurel, Miss., and Budwin J. Lee, safety director for Wood Conversion Co., Cloquet, Minn.

Specialties Manufacturing Committee: Vincent P. Coulon, safety director for Sealright Co. Inc., Fulton, N. Y. (chairman); J. D. Hartleroad, safety director of KVP Co., Kalamazoo, Mich., and William A. Strachan, resident manager for Montgomery Street Div. of Fibreboard Products, Inc., San Francisco, Cal.

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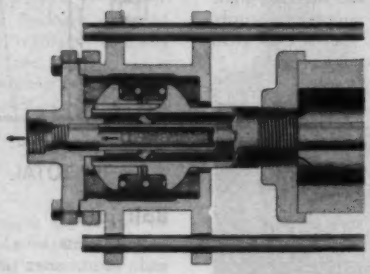
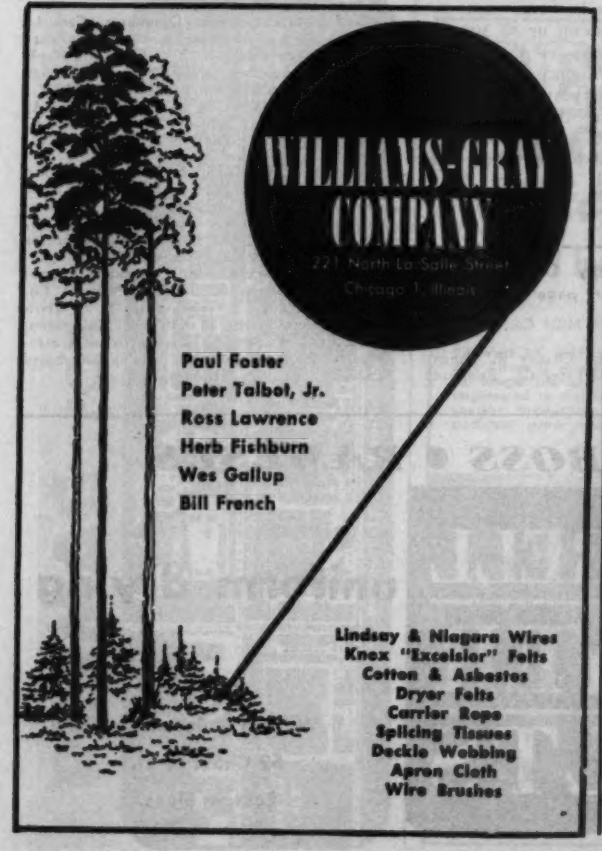


Write for complete information. **Johnson Joints are also furnished in pipe-supported and self-supported types.**

The Johnson Corporation
845 Wood St., Three Rivers, Mich.



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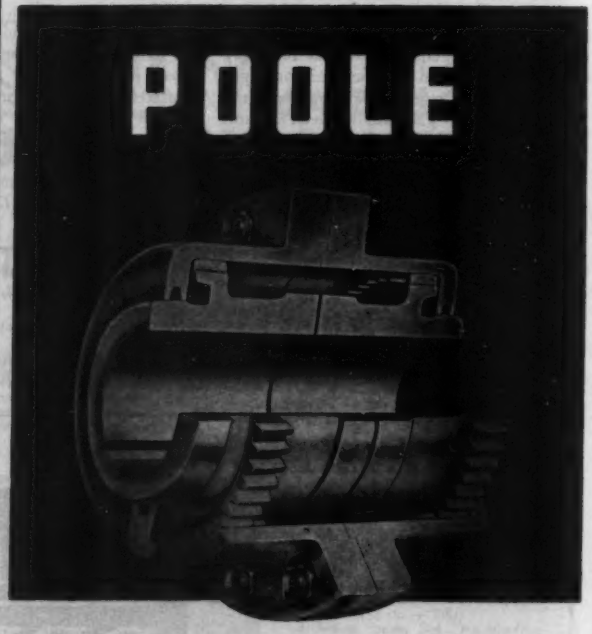

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Books

CELLULOSE AND CELLULOSE DERIVATIVES. Vol. V: Parts I and II. Second edition. Edited by Emil Ott and Harold M. Spurlin. Published by Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. 6¼ x 9¼. 1055 pages. $12.00 per copy.

This fifth volume in the series of monographs on the chemistry, physics and technology of high polymeric substances consists of three parts, dealing with cellulose and cellulose derivatives. (Part III is soon to be published.) This second edition has been completely revised, rewritten, and reorganized. It has been expanded by 500 pages. "Scientific aspects are treated in full, and technological details and processing information are included to assist in a full understanding of materials in commercial use."

There are a number of new contributors to this edition. Many of these contributors are directly connected with industrial work in the cellulose field and have access not only to knowledge possessed by industry but also to much of that contributed by academic and research institutions. Approximately one-fourth of the authors are representatives of academic and research institutions. A number of colleagues of the editors at Hercules Powder Co. also contributed to this volume.

Part I contains a new introductory chapter highlighting the importance of cellulose and justifying the organization of the book. Four additional chapters cover the occurrence of cellulose, the chemical nature of cellulose and its derivatives, the structure and properties of cellulose fibers, and the properties of substances associated with cellulose in nature.

Part II, containing four chapters, deals with the preparation of cellulose from its natural sources, bleaching and purification of wood cellulose, properties and treatment of pulp for paper, and derivatives of cellulose.

EVERYTHING AND THE KITCHEN SINK. Published by Farrar, Straus & Cudahy, New York. 7¾ x 10½. 160 pages. Paperbound. $4.00.

This volume traces the progress of industry in the United States during the past 100 years. It tells part of the story of what the American system really is — not in conjectures, but in facts and pictures.

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PROCESS ENGINEERING ECONOMICS. By Herbert E. Schweyer. Published by McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36, N. Y. 6¼ x 9¼. 409 pages. $7.50.

This book is both a text and reference for students, as well as for practicing engineers and other personnel in the process industries.

For practicing engineers, this is a source book of ideas for effecting savings in design and operation, presented in the terminology and form with which management is familiar. It provides a composite coverage of theoretical engineering economics; accounting and finance data, including cost estimations and evaluations of the economic feasibility of operations, and economic balance (where certain costs rise and others decrease as a function of equipment size or plant capacity) in order to determine the optimum range of operations at lowest cost.

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Booklets and Pamphlets

LITTLELEAF DISEASE OF SHORTLEAF AND LOBLOLLY PINES (Circular No. 840). By W. A. Campbell and Otis L. Copeland, Jr. Published by the U. S. Department of Agriculture. (Order from Superintendent

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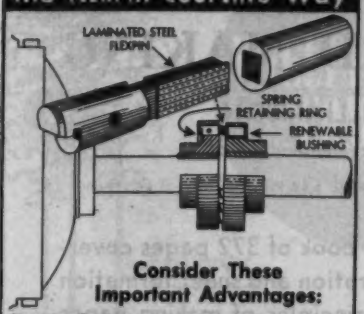

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New Literature . . .

of Documents, Government Printing Office, Washington 25, D. C.) 44 pages. 25 cents. This booklet discusses littleleaf disease, covering causes, symptoms, amount of yearly damage, possible treatment, etc.

GUM FLOW AND PITCH-SOAK IN VIRGINIA PINE FOLLOWING FUSARIUM INOCULATION. (Station Paper No. 40). By George H. Hepting. Published by Southeastern Forest Experiment Station, Asheville, N. C. 8 x 10½. 10 pages. This study on gum flow and pitch-soak in Virginia pine following fusarium inoculation contains photographs and tables. References are listed.

FOR GREATER SAFETY, BEST CONTROL, PICK RIGHT BOILER WATER-LEVEL GAGE. By Frank Ptacek. Reprinted by Yarnall-Waring Co., Mermaid Lane, Philadelphia 18, Pa. 8¼ x 11¼. 3 pages. This article reprint from *Power* magazine discusses the following: primary function of a water gage, water-storage capacity, pressure range, installation tips, illumination, interferences, televising gage level, gage uses, gage valves, planning, gage care, and choosing the gage.

USE OF HARDWOODS IN THE MANUFACTURE OF NEWSPRINT (Report No. 2027). By G. H. Chidester. Published by U. S. Forest Products Laboratory, Madison 5, Wis. 8 x 10. 8 pages. This report describes the possibilities of using hardwood pulps as part or all of the composition of newsprint. It includes a discussion of the conventional pulping processes used in making pulp for newsprint: groundwood process, sulfite process, and sulfate process; and a discussion of three new pulping processes: neutral semichemical process, cold soda process, and chemigroundwood process.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Hydraulic Log Splitter. Carthage Machine Co., Carthage, N. Y. — This 4-page bulletin (100) describes and illustrates Carthage hydraulic log splitters which quarters logs with one stroke.

Lift Truck. Hyster Co., Dept. PI, 2902 N.E. Clackamas St., Portland, Oregon — Operating advantages of the Hyster Monomast lift truck, a single-mast design with panoramic visibility, are illustrated in this 6-page phamplet Form 1402. The lift truck is available in 3000- and 4000-lb. capacity and according to manufacturer is said to be unexcelled for work-productivity, visibility, strength and safety. It has a lifting speed of 58-ft. per minute.

Packings, Gaskets, Special Parts and Stock. Chemical & Power Products, Inc., 11 Broadway, Dept. PI, New York 4, N. Y. — Bulletin CP552 covers Teflon ring packing, impregnated asbestos packing, V-type packing and the patented Teflon seal cage. Bulletin CP553 covers Teflon jacketed gaskets, solid ring gaskets, expansion joints and special Teflon gaskets. Bulletin CP554 illustrates many molded and machined parts fabricated from several Teflon products and also lists Chempro's line of molded and extruded Teflon stock.

Centrifugal Stock Pumps. Sandy Hill Iron and Brass Works, Dept. PI, Hudson Falls, N.Y. — Sandy Hill manufactures the Kamyr centrifugal stock pumps which are particularly designed for pumping an even flow of pulp slurries at high consistencies. Bulletin No. 55-101 includes a performance chart and some typical applications of this type pump for handy reference.

Process Control Instrument. Fischer & Porter Co., Dept. PI, 397 Jacksonville Rd., Hatboro, Pa. — Complete descriptions and specifications are given in Catalog 2 (24 pages) of standardized process control instruments, ready for immediate shipment. This catalogue also includes many diagrams, capacities are listed, and also list prices of this equipment.

Organic Chemical Catalogue. General Aniline & Film Corp., Antara Chemicals Div., Dept. PI, 435 Hudson St., New York 14, N.Y. — One of a series of 16 brochures describing Antara's products. The organic chemicals listed are produced in commercial or semi-works quantities. The products are described, minimum standards governing shipment are set forth, and hazards, when present, are listed.

Centrifugal Chemical Pumps. Worthington Corp., Dept. PI, Harrison, N. J. — Features of this 20-page bulletin, No. W-350-B14B, include information and an outline drawing of Worthite pumps with standard stuffing box; parts list and diagram of standard mechanical seal, and complete information on application and construction modifications. Also included are 7 pages of rating charts showing hydraulic coverage for 50- and 60-cycle speeds and photographs of typical open-type impellers.

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For paper and pulp mills and paper converting plants. Our service is rendered without charge to employers seeking executives. No charge to applicant until position is accepted. We invite your inquiries.

CHARLES P. RAYMOND SERVICE, Inc.

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WANTED — Chemist or chemical engineer with boxboard experience. Mid-West mill has excellent opportunity for technical man who wishes to work close to production in the development and control of boxboard, medium, and liner. Please submit full details regarding personal data, education, experience, and salary desired in first reply to: Director of Board Research & Development, Central Fibre Products Company, Quincy, Illinois.

POSITIONS FOR PAPER EXECUTIVES

The Nation's largest executive placement agency has an exclusive department for the nationwide placement of successful engineers, technical men and salesmen in the paper industry. Immediate openings in all parts of the country for men under 48 earning over $7,000. Write to R. Graebner, Graebner Executive Exchange, 116 S. Michigan, Chicago, Illinois.

TECHNICAL REPRESENTATIVE WANTED

Prominent supplier to paper industry needs man with operating experience in this industry for technical service work. Knowledge of fourdrinier and cylinder machines desired. Must be willing to travel. Prefer 40 or younger. State salary requirements, experience, availability. All replies confidential. Address Box 612, The Paper Industry.

Sulphite Mill Acid Plants
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Sulphur Burning Plants • Jenssen Two Tower Acid Systems • Gas Coolers—Surface and Spray Type • Jenssen Pressure Acid Systems • Jenssen Auxiliary Process Towers • Recovery Plants—Cooking Acid

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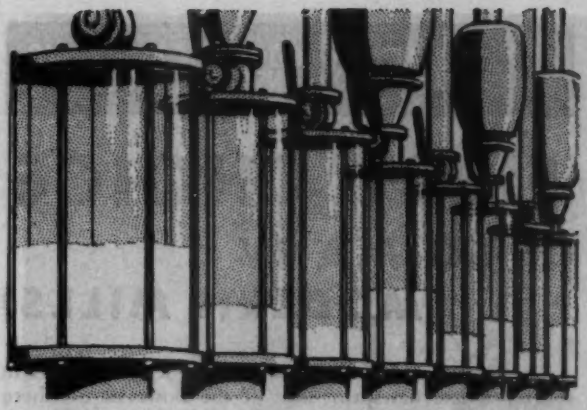


Hardened Deposits Removed from Centrifugal Pulp Cleaners Without Dismantling

Mill soaks sumps clean with Oakite Compound No. 84A—reports time and work saved

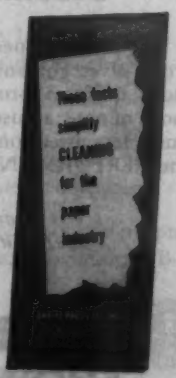
After a time, centrifugal pulp cleaners need a cleaning themselves. Residue of sizing and stock builds up and hardens on the plastic sump cylinders, making visibility difficult. One mill had to remove cylinders, to scour and scrub out by hand.

The Oakite Technical Service Representative suggested a better way—*chemical cleaning in-place*. He demonstrated. A solution of Oakite Compound No. 84A was made up, introduced into each cylinder through the pipes used for rinsing and allowed to soak. After 45 minutes, cylinders were pressure-rinsed with clear water. Results: the sumps looked clean as new, with no attack on the plastic cylinders. Not only are time and work for dismantling and hand cleaning now saved, but a better job is being done, too.

Proving that... in industrial cleaning it pays to consult the Oakite Man first.

* * *

Many paper mill cleaning problems and their answers are discussed in free Oakite Bulletin No. 4647. Write Oakite Products, Inc., 74 Rector Street, New York 6, N. Y.



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OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U.S. & Canada

DeZURIK AUTOMATIC RECORDING CONSISTENCY REGULATORS

FIRST CHOICE IN SO MANY MODERN MILLS!

The installation of DeZurik Consistency Regulators in the up-to-date newsprint mill of the Bowaters Southern Paper Corporation at Calhoun, Tennessee, is further evidence that "modern mills choose DeZurik."

There are good reasons for the consistent choice of DeZurik Regulators. They're ACCURATE — variation limited within plus or minus .1%; DEPENDABLE — uniform operation despite spattering stock; SIMPLE — only one adjustment to change consistency setting; AUTOMATIC — 24-hour recorder-controller delivers record of both incoming and outgoing stock variations; VERSATILE — wide range of box designs.

EVERY DAY MORE AND MORE MILLS ARE INSTALLING MODERN

DeZURIK AUTOMATIC CONTROL VALVES

The precision performance of DeZurik Automatic Control Valves guarantees more trouble-free operation . . . a more uniform product. Capable of responding to the most minute adjustments in setting, DeZurik Valves require less attention, no lubrication, are without question the PERFORMANCE CHAMPIONS in any mill.

For more information on modern DeZurik Mill Equipment, write to

DeZURIK SHOWER COMPANY

SARTELL, MINN.

MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York: per cwt.

No. 1 White Shirt Cuttings	15.00 to 15.50
New Unbleached Muslins	16.50 to 17.00
Fancy Shirt Cuttings	6.00 to 6.50
No. 1 Percales	7.00 to 7.50
No. 1 Washables	3.00 to 3.25
No. 1 Light Silesias	8.00 to 8.50
No. 1 Light Prints	5.50 to 6.00
Light Flannelettes	8.00 to 8.50
Cottonades	3.75 to 4.00
Blue Overalls	8.00 to 8.50
Blue Cheviots	8.00 to 8.50
Canton Flannels, Bleached	11.50 to 12.00
Canton Flannels, Unbleached	11.50 to 12.00
Osnaburg Cuttings	10.00 to 11.00
Underwear Cuttings, Bleached	16.00 to 16.50
Underwear Cuttings, Unbleached	16.00 to 16.50
Khaki Cuttings—	
Sun Tan	6.25 to 6.75
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.50 to 8.00
White	12.00 to 13.00
Grey	12.00 to 13.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	Per cwt.
Roofing	
No. 1	1.75 to 2.00
No. 2	1.55 to 1.65
No. 3 and 4	1.25 to 1.35
Twos and Blues—	
Repacked	2.50 to 2.75
Thirds and Blues—	
Repacked	2.25 to 2.50
Miscellaneous	2.00 to 2.15
Whites, No. 1—	
Repacked	4.00 to 4.25
Miscellaneous	3.25 to 3.50
White, No. 2—	
Repacked	3.00 to 3.25
Miscellaneous	2.50 to 2.75

RAGS (Foreign)

ex dock New York City

NEW RAGS

per cwt.

New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

per cwt.

No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shoppings	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	5.50 to 6.00
Domestic	5.50 to 6.00
Wool Tares—	
Light	5.50 to 6.00
Heavy	5.75 to 6.25
No. 1 Scrap Bagging	4.50 to 5.00
Manila Rope—	
No. 1 large, dom.	8.00 to 8.50
No. 1 small	7.00 to 7.50
Sisal Rope—	
No. 1 large	6.00 to 6.50
No. 1 small	5.50 to 6.00
New Burlap Cuttings	5.75 to 6.25
Jute Threads—	
Foreign (Nom.)	6.00 to 6.25
Domestic	0.25 to 0.50
Strings—	
No. 1 sisal	4.75 to 5.00
No. 2 sisal	4.25 to 4.50
Soft jute	4.75 to 5.00
Mixed	2.50 to 2.75

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton
Shavings—	
Hard White Env. Cuts	140.00 to 150.00
Hard White No. 1	110.00 to 115.00
Soft White, one-cut	90.00 to 95.00
Soft White, No. 1	75.00 to 80.00
Fly Leaf No. 1	42.50 to 47.50
Fly Leaf, Woody No. 1	45.00 to 50.00
No. 2 Mixed Col. Woody	30.00 to 35.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	25.00 to 27.00
Mixed Books	22.00 to 23.00
Ledger Stock—	
No. 1 White	65.00 to 70.00
No. 1 Mixed (Colored)	42.50 to 47.50
Manilas—	
New Env. Cuttings	75.00 to 80.00
New Cuts, One-Cut—	
Extra Manilas	23.00 to 25.00
Manilla Tab Cards, Free of Ground Wood	95.00 to 100.00
Colored Tab Cards	75.00 to 80.00
Kraft—	
New Envelope Cuttings	85.00 to 90.00
Tripled Sorted No. 1 100%	45.00 to 50.00
No. 1 Old Assorted	32.50 to 37.50
News—	
White Blank	75.00 to 80.00
Overissue	28.00—
No. 1 Folded	24.00—
Old Corrugated Containers	24.00—
New Jute Corrugated Cuts	36.00—
Mill Wrappers	24.00—
Box Board Chips	16.00—
No. 1 Mixed Paper	15.00—

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	5.05—
Ground, cwt.	4.30—
Powdered, cwt.	5.10—
Blanc Fixe—	
Pulp, bulk, ton	100.00—
Dry, barrels	105.00—
Bleaching Powder—	
Drums, cwt	5.00 to 6.00
Casein (Domestic Standard) 20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	27.00 to 29.00
Argentine, lb.	24.00 to 24.50
China Clay—	
Domestic Filler Bulk (mine) ton	10.00 to 13.00
Domestic Coating Bulk (mine) ton	17.00 to 25.00
Imported (ship side) Bulk (lump) ton	30.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.93—
Gelatine (silicon), lb.	1.25 to 1.35
Glyc. (C.P.) drums, lb.	.29½ to .30
Litharge, Powd. bbl. lb	.17 to .17½

MARKET QUOTATIONS

Rosin (Gum)— New York, per 100 lbs.
E ..... 9.55—
F ..... 9.55—
G ..... 9.55—
WW ..... 9.70—

Rosin (Wood), carlots, F.O.B. South .... 6.00—

Salt Cake—
Dom. bulk (wks) ton 28.00 to 29.00
Imp. bulks on dock— (Atl. ports) ton (Nom.) ..... 22.00—

Soda Ash—
Bulk (works) cwt... 1.35—
Paper bags, cwt..... 1.65—

Soda (Caustic)—
Solid drums, cwt.... 3.85 to 4.50
Ground and flake, drums, cwt..... 4.25 to 5.00

Sodium Silicate—
60 deg. 55 gal. drums, (works) cwt..... 1.60 to 1.70
40 deg. 35 gal. drums, (works), cwt..... 1.35 to 1.40

Starch—
Pearl, 140 lb. bags, cwt. ..... 7.14—
Pearl, barrels, cwt. .. 7.14—
Paper (Sq.) bags, cwt. 7.14—
Powdered, barrels, cwt. 7.35—

Sulphur (Crude)
(Mine) bulk, long ton 26.50 to 28.00

Talc—
Dom. 100 lb. bags (mine) ton ..... 25.00 to 28.00
Canadian ..... 35.00 to 45.00

Titanium Dioxide—
Barium Pig, bbls., lb. .22½ to .23
Calcium Pig, bbls., lb. ..... .22½ to .23

Zinc Oxide, bags ..... 14.00 to 15.50

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follow:

Bleached Sulphite ....145.00—
Bleached Sulphite, Canadian .....150.00—
Unbleached Sulphite ...120.00—
Unbleached Sulphite, Canadian .....130.00—
Bleached Soda .....142.50—
Bleached Soda, Canadian..142.50—
Kraft Bleached .....147.00 to 150.00
Kraft, Bleach., Hardwood .....145.00—
Kraft, Bleach., Southern.150.00—
Kraft, Bleach., Canadian.150.00—
Kraft, Unbleached, Northern .....120.00—
Kraft, Unbleached, Southern .....112.50 to 120.00
Kraft, Unbleached, Canadian .....125.00—
Kraft, Semi-Bleached, Southern .....130.00 to 135.00
Sulphite Screenings .... 72.50—
Sulphate Screenings .... 67.50—
Groundwood ..... 80.00 to 85.00

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish .....150.00—
Bleached Sulphite, Norwegian, freight allowed.145.00—
Bleached Sulphite, Finnish, freight allowed.150.00—
Unbleached Sulphite, Swedish .....130.00—
Unbleached Sulphite, Finnish, freight allowed .130.00—
Kraft, Unbleached, Swedish, freight allowed..115.00—
Kraft, Unbleached, Finnish, freight allow...115.00 to 145.00
Kraft, Bleached, Swedish, on dock....150.00—
Kraft, Bleached, Norwegian .....150.00—

PAPER

Quotations are mill quotations New York City

Boards—
Prices per ton, delivered in New York, 10 tons or more:
Plain chip ..... 90.00—
News vat lined chip .. 95.00—
.009 chip, rolls ..... 95.00—
Filled news ..... 90.00—
Solid news ..... 95.00—
White vat lined chip..125.00—
Chip tube and can stock.100.00—
Single manila lined chip.140.00—
Single jute lined chip..125.00—
Kraft liner .....130.00 to 140.00

White patent coated:
.020 .....155.00—
.018 .....157.50—
.016 .....160.00—

Book Paper f.o.b. New York— per cwt
Machine coated, two sides
70 lb. No. 2 enamel; 25x 4 cases $17.25
38-500, trimmed 4 sides. Carloads $16.30
45 lb. enamel, 25x38-500, 4 cases $13.05
trimmed 4 sides..... Carloads $12.10

Uncoated
55 lb. No. 2 offset, 25x38 4 cases $14.80
500, trimmed 4 sides.... Carloads $13.85
50 lb. A Grade English Finish, 25x38-500, as 4 cases $14.05
trimmed ..... Carloads $13.16
20 lb. envelope, 17x22-500, untrimmed ..... Carloads $12.40
16 lb. tablet, 17x22-500 ..... Carloads $11.33

Rag Content Bond—
(White, 5,000 to 10,000 lbs., basis 16 lb.)
100% rag..... 58.80—
75% rag..... 45.45—
50% rag..... 36.20—
25% rag..... 29.70—

Rag Content Ledger—
(White, 5,000 to 10,000 lbs.)
100% rag..... 58.80—
75% rag..... 45.45—
50% rag..... 36.20—
25% rag..... 29.70—

Sulphite Bond—
(White, 5,000 to 10,000 lbs., basis 16 lb.)
No. 1..... 20.10—
No. 2..... 20.40—
No. 4..... 17.75—

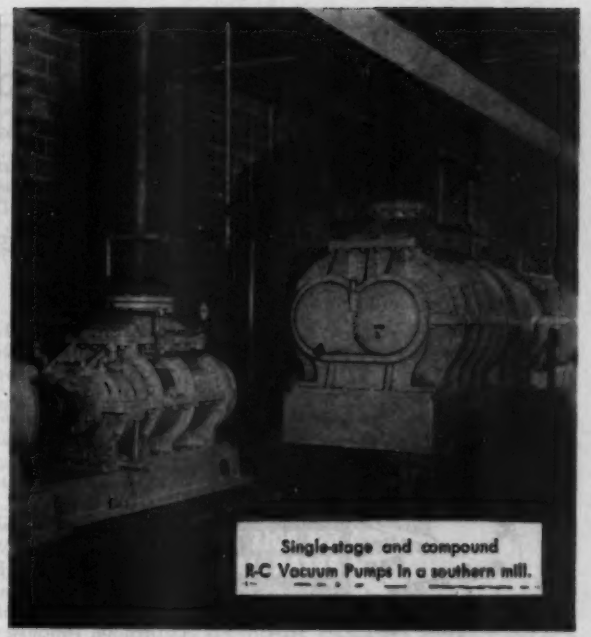
Sulphite Ledger—
(White, 5,000 to 10,000 lbs.)
No. 1..... 20.50—
No. 2..... 19.75—
No. 4..... 18.15—

News delivered in New York— per ton
Rolls, Standard (Contract) ..... 126.00 to 131.00
Rolls (Spot) ..... (Nominal)
Sheets .....138.00—

Tissues (Carlots) f.o.b. New York— per ream
White No. 1..... 1.75—
White No. 2 ..... 1.35—
Bleached Anti-Tarnish.. 2.20—
Colored ..... 2.00—
Anti-Tarnish Kraft .. 1.65—
Manila ..... 2.00—
Napkins, semi-crepe (12½ lb. to M shts.) per cs. ..... 1.00—
Napkins, full crepe and embossed (13½ lb. to Mshts.) per cs. .. 1.00—
Toilet, Bleached (M shts.) per cs..... 9.35—
Toilet, Unbleached (M shts.) per cs. .. 7.90—

Towels f.o.b. New York— per case
Bleached ..... 6.80—
Unbleached ..... 5.90—

Wrappings (Kraft) f.o.b. New York— (Basis 50 lb. & heavier) per cwt.
Standard wrapping .... 8.25—
Butchers, counter rolls.. 8.50—
Standard bag, mill rolls. 7.75—
Shipping sack, mill rolls. 8.00—
Gumming, mill rolls.... 8.25—
Asphalting, mill rolls...8.00—
Envelope, mill rolls.... 9.50—



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IN VACUUM PUMP PERFORMANCE

Important operating factors, adding up to *R-C plur-ability*, account for the rapidly increasing use of Roots-Connersville Positive Displacement Vacuum Pumps for paper mills.

- **Reduced horsepower at higher speeds** (600 rpm and up) creates power savings up to 25% and far lower first cost of motors.
- **Single-stage or multi-stage units** in size ranges for all requirements.
- **Long-time reliability and low maintenance** no internal contacts or excessive wear. Almost complete freedom from down-time and maintenance.
- **Small floor space** less expensive foundations. Lower cost per cubic foot capacity. Adaptable to crowded space.
- **Minimum sealing water** from 4 gpm. to 40 gpm. Efficiencies not affected by changes in water temperature.

To see how leading paper mills make a continuing profit from *R-C plur-ability*, write for details, in Bulletin 50-B-13.

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A DIVISION OF DRESSER INDUSTRIES, INC.
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Posters should be one of the top aids in your safety program. No other safety medium can reach your entire audience—not once, but many times each day—with such low-cost safety messages. They are directed at the worker acts and worker attitudes that lead to accidents. Posters lend *timeliness, repetition and continuity* to your safety program . . . the three fundamental principles of direct selling.

The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in three sizes: "A" size, 8½" x 11½"; "B" size, 17x23"; and "C" size, 25x38". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

Write for a free copy of the Directory of Occupational Safety Posters. This 72 page catalog illustrates 744 posters, indexed and classified for specific operations.

NATIONAL SAFETY COUNCIL

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PAPER INDUSTRY Whither?

..... In production, processes, new products, markets

Newsprint

Not since the outbreak of hostilities in Korea has the supply of newsprint been as tight as it is in 1955. Current newsprint consumption runs about 8 per cent above last year's level, and some newspapers are paying premiums of up to $50.00 a ton on the gray market. The added annual production capacity of the U.S. mills of 600,000 tons by the end of 1956 would about balance the 1955 additional annual consumption set by this rate of increase, but it is not likely to meet the increased requirements for 1956.

Added to the demand created by the tremendously increased newsprint consumption in the United States will be the demand arising in the United Kingdom after the termination of the newsprint rationing program in 1956. British publishers are already pressing for commitments from Canadian mills to increase the 1956 shipments by 100,000 tons over the 1955 deliveries estimated at 336,000 tons. Since Canada is not expected to agree to increase its commitments to England by more than 50,000 tons, United Kingdom buyers are currently busy in Sweden to secure any available quantity of Swedish newsprint for the British market.

In view of the extremely tight newsprint situation and the anticipated increased future demands for this product, a number of Canadian mills have already announced price increases of $5.00 per ton with the view to meeting expenses for additional newsprint production facilities.

Despite widespread protests to the $5.00 per ton newsprint hike, it is probably unrealistic to assume that, especially in view of the accentuated demand and the existing gray market in the U.S.A., price increases will not be announced generally by newsprint producers, although this could conceivably result in the losses of such increasingly important newsprint markets as India and other countries that are being ardently wooed by the USSR and China.

Plastic coated milk cartons

The reported presence of wax particles in milk and the occasional leakage of wax-coated milk bottles has resulted in increased consumer demand for the recently introduced plastic-coated milk carton. This trend is likely to accelerate. Over-all use of the pastic-coated paper container for meats and dairy products on the supermarket level has increased more than 20 per cent in the U.S.A. during the past year.

The use of tall oil in paints

The increasing use of fatty acid constituents of tall oil, i.e. oleic and linoleic acids, in the drying oil field derives from the comparatively recent revolutionary development which has introduced polyols instead of glycerol as the alcohol base in the esterification reaction with fatty acids to produce drying oils. Polyols, which themselves can be unsaturated and can take part in the linking action, have made the linking property of the fatty acids in the drying oil a relatively unimportant factor. This is the reason why soybean oil fatty acids, which are similar to tall oil fatty acids, have in recent years enjoyed such popularity in the paint industry.

The yields of raw tall oil skimmings range from 150-250 pounds per ton of unbleached kraft pulp, and total 1956 U.S. refining capacity is expected to be 500 million pounds. This means that there still remains too much unrecovered tall oil going to waste.

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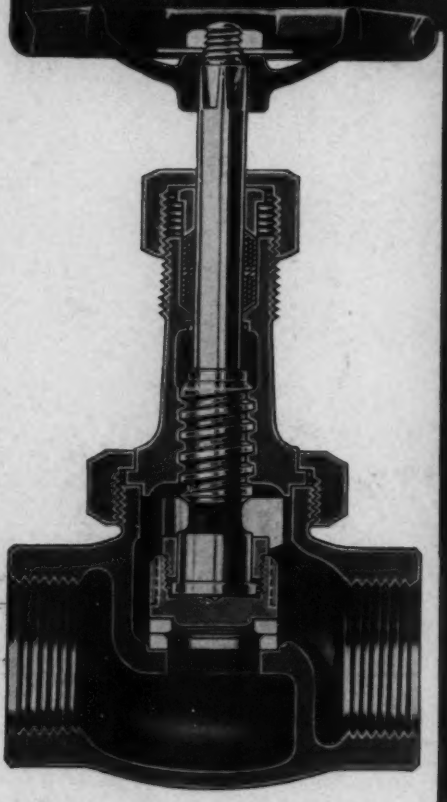

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